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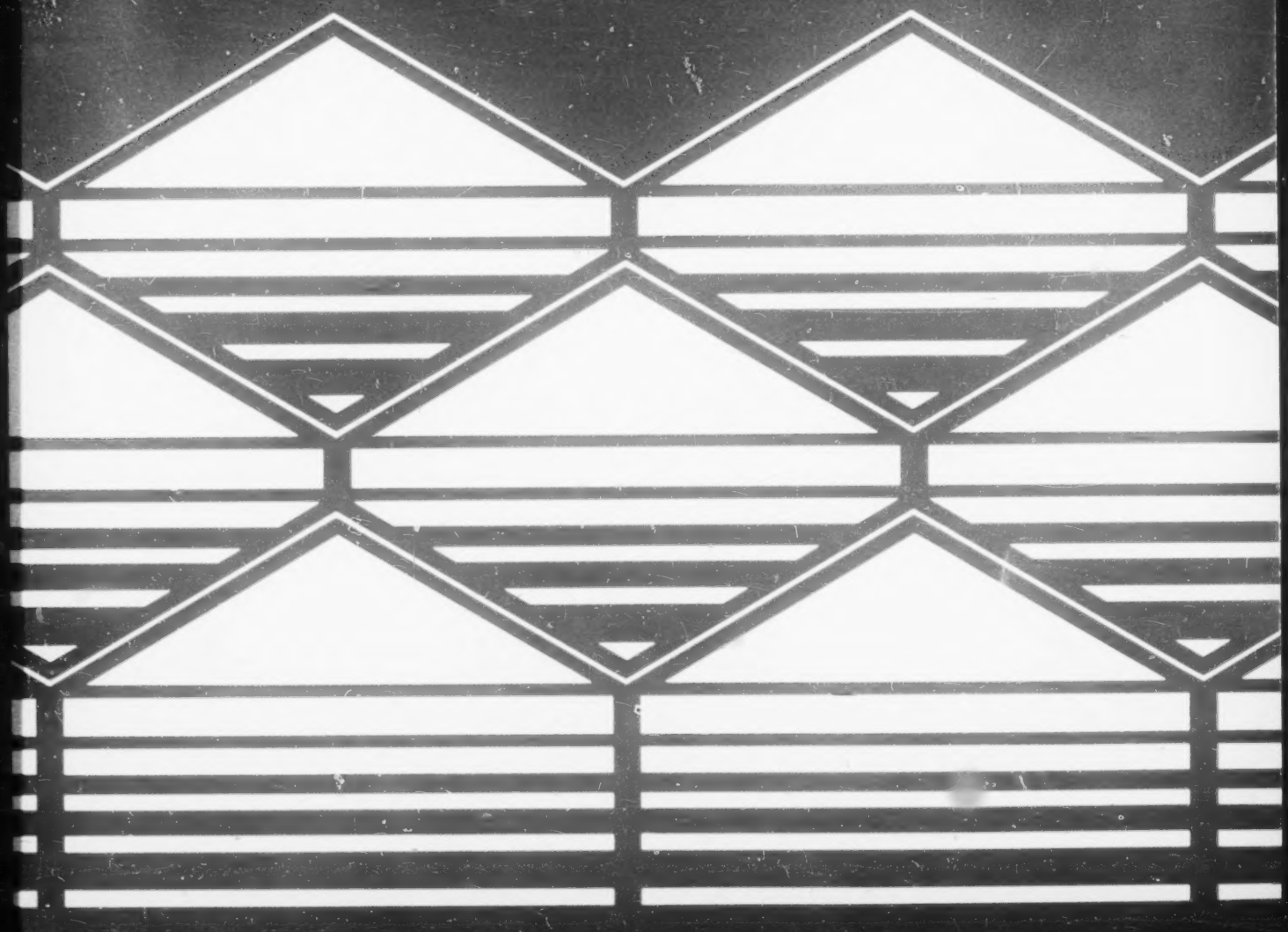
AGA American Gas Association

40th Anniversary Edition

Gas Householding Survey: 1987



Gas Househeating Survey: 1987

40th Annual Survey
Gas Utility Industry
United States

Househeating Customers, 1987

Conversions and New Housing, 1987-1988

Househeating Market Shares by Utility Company, 1987

Competitive Fuel Prices, 1987

Gas Heating Bills, 1987

Gas Cooling Tonnage, 1987

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INTRODUCTION

This year's report is a milestone in that it is the 40th Annual Gas Househeating Survey conducted by the American Gas Association.

The data published in this report highlight two significant events: (1) for the first time since the early 1970's, natural gas' market share of all new residential construction (single and multi-family) exceeded electricity -- 48 percent versus 45 percent; and (2) conversions from electricity to gas in existing homes have reached an historic level, increasing to 36,153 units or 23 percent of all conversions to gas. Together these statistics reveal a dramatic, positive shift to natural gas from electricity.

The data collected for 1987, as well as projected data for 1988, provide a unique and comprehensive portrait of the residential gas market. Detailed information is presented by state and region, including customers, fuel prices, anticipated inventory additions from new homes, conversions from alternate fuels, and gas cooling tonnage in place. Company-specific data reported in this publication are unavailable in any other format.

A total of 151 gas utility companies responded to this year's survey. This response rate is up moderately from last year and shows a consistent year-to-year increase in company participation. The respondent companies represented the vast majority of the nation's residential gas customers, i.e., some 93 percent in 1987. This percentage of gas customers was also higher than last year. The information provided by these utilities was expanded to obtain the state and national totals shown in Tables 3 and 5. Individual company data are listed by region and state in Appendices 1, 2 and 3. Please note that some tabular data may not add to totals due to rounding.

The American Gas Association wishes to thank those companies who participated in the survey for making this publication possible.

I. Executive Summary

Residential gas market activity was again strong in 1987. Unit additions, market shares and conversions were up, while prices and heating bills were generally down. Perhaps most important was the significant increase in new units in specific capacity-short regions like the Northeast.

▪Total conversions of existing units from alternative fuels to gas househeating were 154,430 in 1987, slightly higher than last year's level and in line with recent years. Based on A.G.A. survey data, 99,184 or 64 percent of all heating conversions, were from fuel oil to gas, 36,153 (23%) were from electricity, 13,608 (9%) from LPG, and 5,485 (4%) from "other fuels". (coal, wood, etc.). (See Figure 1.)

▪Natural gas conversions from electricity were up another dramatic 30 percent in 1987 after a robust 34 percent increase in 1986. Electric conversions have quadrupled since 1983.

▪Natural gas improved its market share as the U.S. housing construction market continued its vigorous growth in 1987. For the second year in a row gas heated single family home completions showed a greater market share than electricity. This year the ratio was 52 percent to 40 percent, while last year it was 47 percent versus 44 percent. Total new housing completions declined by 5 percent to 1.66 million in 1987. Gas' overall market share of new housing completions increased to 48 percent in 1987 from 43 percent in 1986. The overall electric share again dropped, by 6 points to 45 percent.

▪New gas househeating unit additions numbered 724,662, a 6 percent increase over 1986, with the Northeast showing a solid 16 percent increase. The addition of new gas househeating units from conversions of existing units and new housing combined totaled 879,092 in 1987, a 5 percent increase from last year.

▪There were 47.78 million residential gas customers by year-end 1987, a net increase of 1.8 percent over 1985. Househeating customer saturation was down slightly at 88.3 percent. (Number of customers with gas heat divided by number of total customers).

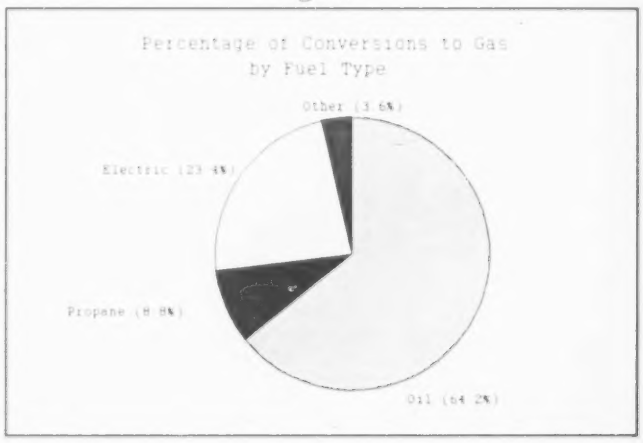
▪Average year-end gas prices declined in seven of the nine census regions. The price declines ranged from $0.08/MMBtu to $0.51/MMBtu, or 2 percent to 8 percent. The exceptions were the West North Central division which showed a slight 2 percent increase or $0.09/MMBtu and the Mountain division which showed a 4 percent increase. Average annual heating bills declined in six census divisions, due to both the price moderation and lower degree days compared to last year. The heating bills in these divisions had declines ranging from $8 to $57.

▪Gas utilities expect to add approximately 145,000 conversions in 1988, which is at the same level as last year's projection. The 1988 projections for gas househeating additions from newly constructed units are about 10 percent lower than actual 1987 at 649,850 units. This would be consistent with the data on total new housing construction starts, which were down 11 percent in 1987.

▪In single family dwellings, gas consumption for househeating was 71.8 Mcf, while base load consumption was 33.4 Mcf. By comparison the average multi-family dwelling unit (2-4 units per dwelling) consumed 49.0 Mcf and 26.6 Mcf for househeating and base load use, respectively.

▪With respect to gas cooling, about 400,000 tons of equipment were in place at the end of 1986. In 1987, an additional 6,500 tons were installed or a 1.6 percent increase.

Figure 1



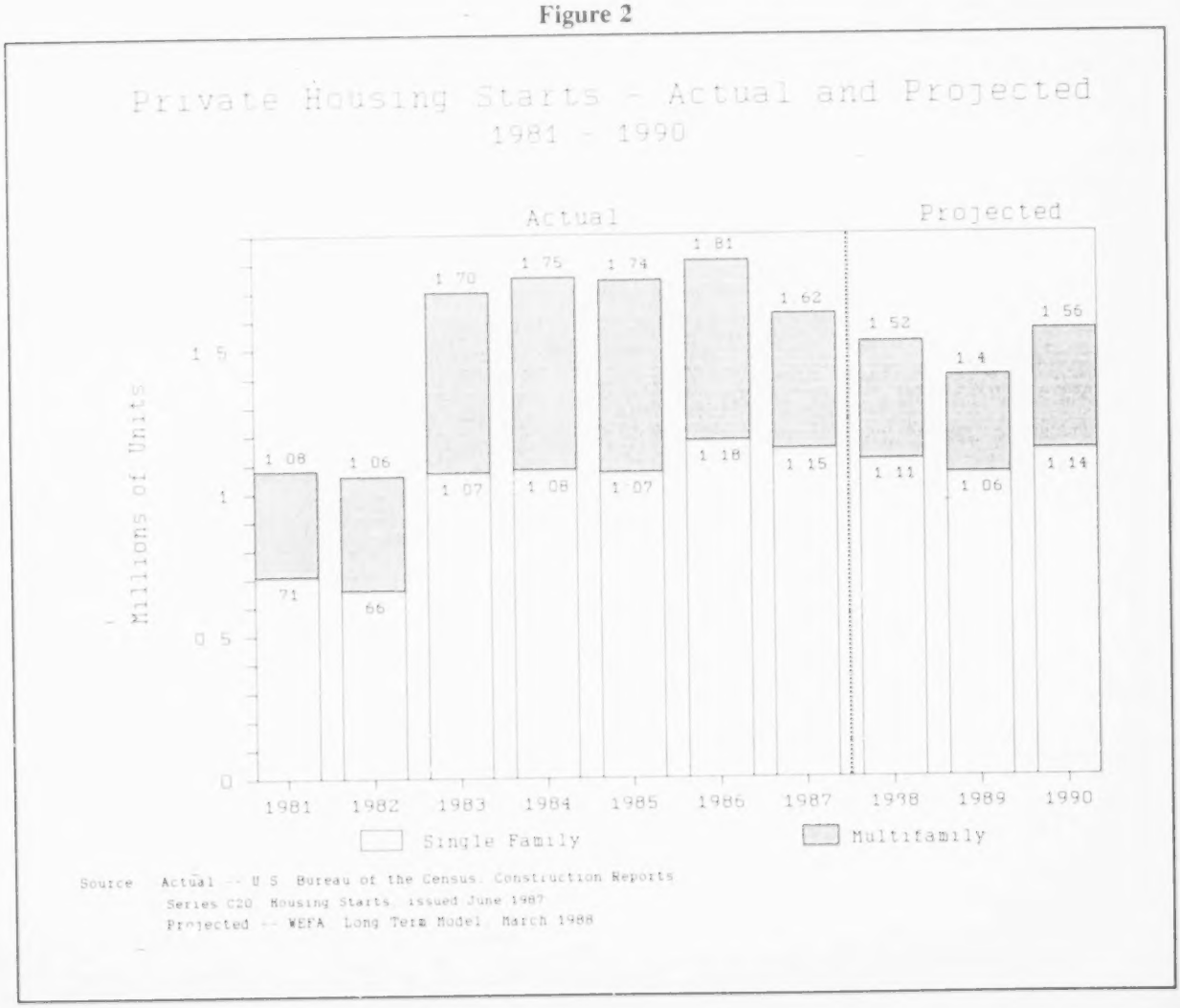
II. United States Housing Market In 1987

New Housing - Starts

The number of new private housing starts (seasonally adjusted) in 1987, 1.62 million units, was 11 percent lower than the 1986 level of 1.81 million units, but well above the 1.06 million units in 1982 (see Figure 2). The decrease from 1986 is due primarily to the 25 percent decrease in multi-family starts from 630,000 to 470,000. The construction of single family units decreased slightly from 1.18 million to 1.15 million. Of the four U.S. regions, only the Midwest showed a slight increase.

Recent monthly housing-start data indicate a slight downward trend in the housing outlook for 1988. Privately owned housing starts authorized in the first four months of 1988 were at a seasonally adjusted annual rate of 1.56 million starts.[1] This is 5 percent below the April 1987 rate. Wharton Econometric Forecasting Associates (WEFA) predicts that 1988 private housing starts would average 1.52 million units. WEFA expects the housing market to then decline again the next year, with starts nearing 1.40 million in 1989 before rising again to 1.56 million in 1990. The reason for this short-run decline is a combination of demographics (fewer baby-boomers), higher costs for new homes, high vacancy rates in the multi-family sector and the negative impact of tax reform on investments in multiple-unit housing.

Figure 2



New Housing - Completions

The natural gas industry achieved a second milestone in 1987 as new gas completions not only outnumbered new electric completions in the single family home market, but also accounted for more than half of single family completions. New gas single family completions increased by 10 percent to 581,000 (See Table 1). Thus, the gas share increased to 52 percent of single family home completions, while the electric share dropped to 40 percent. Figure 3 shows how the gap has narrowed and then crossed over between gas and electric single family home completions since 1980.

Natural gas also showed relative strength in the multi-family completions market. New gas multi-family completions increased slightly in 1987 to 222,000. In contrast, electric multi-family completions decreased by 24 percent to 306,000.

Overall, natural gas improved its share of combined single and multi-family completions in 1987 to 48 percent, up from 39 percent in 1985 and 43 percent in 1986. Combined single and multi-family electric completions declined to 45 percent from 56 percent in 1985 and 51 percent in 1986.

Gas heated completions in 1987 outnumbered electric heated completions in three of four regions among single family homes. Only in the South did new electric heated completions among single family homes outnumber gas heated completions. However, the difference was smaller in 1987, 148,000, compared with a difference of 208,000 in 1985 and 182,000 in 1986. In the multi-family sector gas completions also outnumbered electric in three regions. Again, the South showed a wide margin (132,000) in electric heated completions compared to gas, although fewer than last year and the previous year. Gas completions increased by 47 percent in the Midwest.

Figure 3

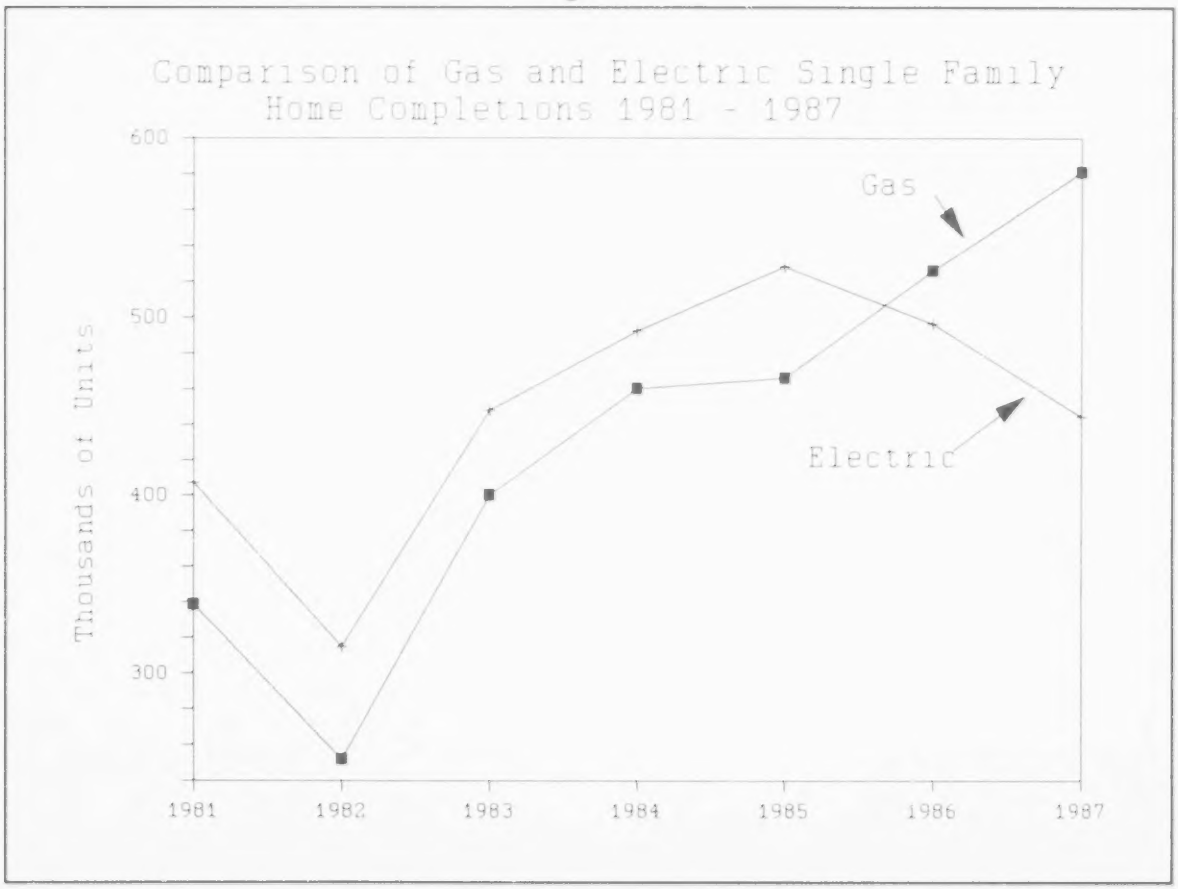


Table 1

1987 Private Housing Completions - By Heating Fuel
(Thousands of Units)

Single Family	Share	Units	Northeast	Midwest	South	West
Gas[a]	52%	581	86	166	154	175
Electricity	40%	444	52	26	302	64
Oil	5%	57	52	3	(I)	(I)
Other	3%	37	5	6	8	19
Subtotal	100%	1119	195	201	464	258
Multi-Family						
Gas[a]	41%	222	35	63	30	95
Electricity	56%	306	18	37	162	89
Oil	1%	5	5	(I)	(I)	(I)
Other	2%	12	2	2	2	6
Subtotal	100%	545	60	102	194	190
Total		1664	255	303	658	448

[a]Includes liquefied petroleum gas.
(I) Insufficient sample size to allow publication.

Source: U.S. Bureau of the Census, Characteristics of New Housing: 1987 Preliminary Data, Construction Reports C25-87-3, May 1988.

Existing Housing

The Bureau of the Census has switched to a biennial basis for the Annual Housing Survey and the data for 1985 are not yet available. A.G.A. estimates that there were 88.8 million occupied housing units in the United States in 1986 and nearly 91 million units in 1987, compared to the last publicly available figure of 84.6 million in 1983. Of this 1987 total, 49.7 million, or 55 percent, were units which used natural gas for heating (see Table 2). The market share for gas heated units was 43 percent in the Northeast, 73 percent in the Midwest (sometimes called North Central), 43 percent in the South, and 64 percent in the West.

Table 2

U.S. RESIDENTIAL HOUSING INVENTORY BY HEATING FUEL
1983-1987
(Thousands of Occupied Units[a])

	1983	1986 Estimated[b]	1987 Estimated[b]	Market Share
United States	84,638	88,840	90,960	
Gas	46,699	48,459	49,660	55%
Electric	15,683	18,382	19,195	21%
Oil[c]	13,031	12,685	12,712	14%
Other[d]	9,224	9,314	9,393	10%
Northeast	18,221	18,689	19,037	
Gas	7,741	8,040	8,260	43%
Electric	1,319	1,566	1,641	9%
Oil[c]	8,226	8,056	8,099	43%
Other[d]	934	1,027	1,037	5%
Midwest	21,618	22,059	22,483	
Gas	15,656	16,039	16,391	73%
Electric	2,172	2,365	2,433	11%
Oil[c]	1,774	1,665	1,659	7%
Other[d]	2,015	1,989	2,000	9%
South	27,931	30,112	30,921	
Gas	12,346	12,851	13,131	43%
Electric	8,557	10,300	10,804	35%
Oil[c]	2,559	2,472	2,468	8%
Other[d]	4,470	4,489	4,518	15%
West	16,868	17,981	18,519	
Gas	10,956	11,529	11,877	64%
Electric	3,635	4,151	4,318	23%
Oil[c]	472	492	487	3%
Other[d]	1,805	1,809	1,837	10%

[a]Units include both single and multi-family.

[b]The Annual Housing Survey is now conducted biennially. The 1985 survey results will not be available until late 1988. A.G.A. estimates for 1986 and 1987 were derived by adding the number of dwellings completed by fuel type, as reported by U.S. Bureau of Census, Construction Reports - Series C-25, for 1984, 1985, 1986, and 1987, to 1983 actual data, considering also the net gains and losses as a result of fuel switching and demolitions in those years.

[c]Oil includes kerosene.

[d]Other includes LP gas, coal, wood, other, and none.

Source: U.S. Bureau of the Census, Annual Housing Survey: General Housing Characteristics, 1981 and 1983.

III. Residential Gas Customers in 1987

Total Residential Customers

With net year-end customer additions of 826,634, the total number of residential gas customers[2] reached 47.78 million in 1987, a 1.8 percent increase over 1986 (see Table 3). The West, with 318,000 new customers, accounted for 38 percent of all new residential customers additions. The Midwest and Northeast regions accounted for 26 percent and 21 percent of additions, respectively.

Househeating Customers

About 42.2 million customers, 88.3 percent of all 1987 residential gas customers, were househeating customers. The gas househeating total residential gas customer ratio, i.e., market saturation, was down slightly from 1986. Househeating customer net additions totaled 513,004 in 1987, which is up from last year. Net additions included existing gas base load customers who converted their non-gas heating system to gas, as well as customers added through new construction and conversions from alternative fuels.

Gas Househeating Unit Additions

The gas industry added 879,092 househeating units in 1987, a 5 percent increase from 1986. Of total additions, 724,662 were from new housing,[3] an increase in new units of 6 percent from 1986. Figure 4 shows the change in new househeating unit additions for each of the nine census divisions between 1986 and 1987. The Northeast (New England and Middle Atlantic) showed a significant increase in additions from new housing, up 16 percent. The Pacific division also showed a dramatic increase. In contrast, the South showed a decrease in new housing additions, which is due primarily to a slowdown in the rapidly growing Georgia market and a decline in the depressed Texas market. The decline in the Mountain division reflects insufficient state data as well as the impact of the slump in regional economic activity.

In 1987, 154,430 housing units were converted from an alternative fuel to natural gas (see Table 4), an increase of 4.1 percent compared with last year's level of conversions. The actual number of 1987 conversions exceeded the forecast of 145,300 made by responding companies in 1986. This consistently sustained level of 150,000 conversions per year is believed to be a result of lower prices for heating oil (the main source of conversions), on the one hand, and a rapidly growing share of conversions from electricity, on the other.

Figure 4

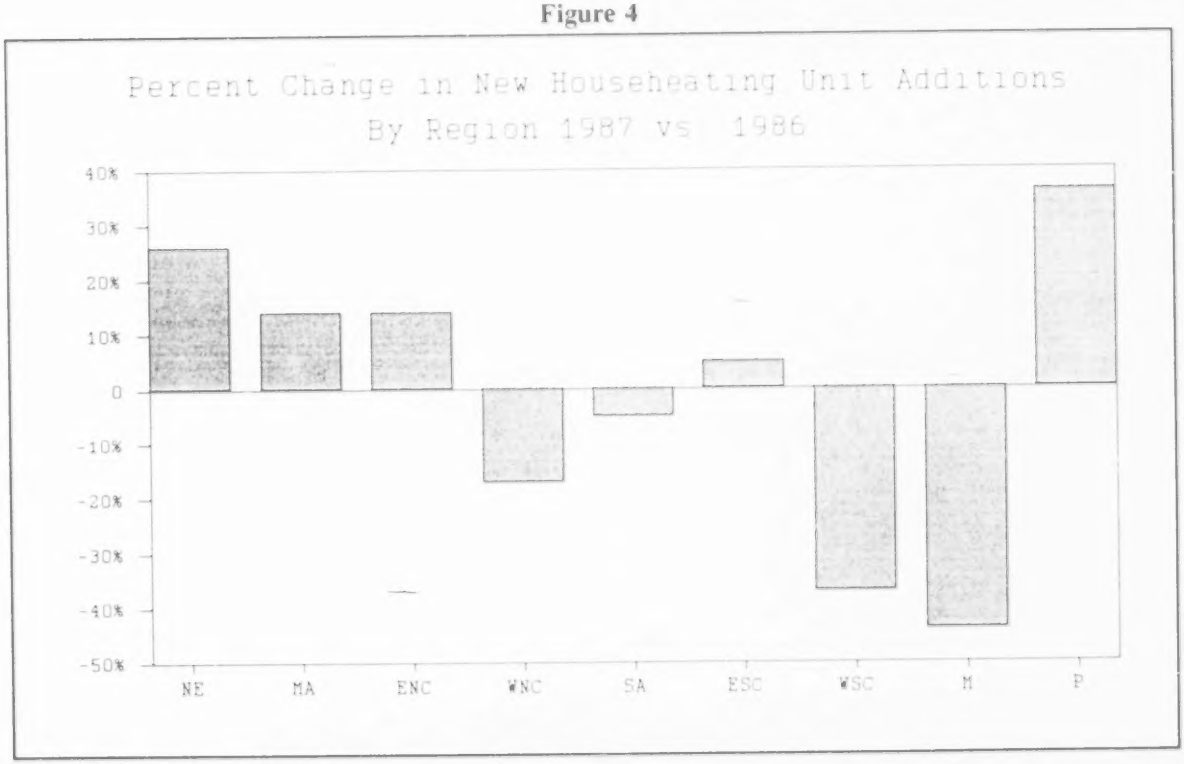


TABLE 3

RESIDENTIAL AND HOUSEHEATING CUSTOMERS OF GAS UTILITIES
AND 1987 HOUSEHEATING UNIT ADDITIONS,
BY STATE, AS OF DECEMBER 31, 1987

Region, Division and State	Residential Customers			1987 Househeating Unit Additions from New Housing and Conversions				
	TOTAL	HOUSE HEATING	PERCENT HEATING	TOTAL (100%)	NEW HOUSING NUMBER	(%)	CONVERSIONS NUMBER	(%)
United States	47,777,657	42,206,271	88.3%	879,092	724,662	82.4%	154,430	17.6%
NORTHEAST	9,775,222	6,470,907	66.2%	170,275	111,420	65.4%	58,855	34.6%
New England	1,783,446	1,239,455	69.5%	42,610	24,164	56.7%	18,445	43.3%
Connecticut	415,721	280,338	67.4%	11,880	8,160	68.7%	3,720	31.3%
Maine	11,862	4,943	41.7%	180	122	67.6%	59	32.4%
Massachusetts	1,092,836	752,475	68.9%	23,555	11,314	48.0%	12,241	52.0%
New Hampshire	56,099	46,001	82.0%	1,111	889	80.0%	222	20.0%
Rhode Island	189,420	139,544	73.7%	4,788	3,303	69.0%	1,484	31.0%
Vermont	18,388	16,154	88.2%	1,096	376	34.3%	720	65.7%
Middle Atlantic	7,991,776	5,231,452	65.5%	127,666	87,255	68.3%	40,410	31.7%
New Jersey	1,900,749	1,316,126	69.2%	65,597	47,710	72.7%	17,887	27.3%
New York	3,830,752	1,951,585	50.9%	35,369	23,255	65.7%	12,114	34.3%
Pennsylvania	2,260,275	1,963,742	86.9%	26,700	16,290	61.0%	10,410	39.0%
MIDWEST	14,678,848	14,012,237	95.5%	225,686	183,835	81.1%	42,652	18.9%
East North Central	10,588,204	10,019,805	94.6%	160,582	128,688	80.2%	31,814	19.8%
Illinois	3,154,083	2,826,003	89.6%	52,855	49,818	94.3%	3,037	5.7%
Indiana	1,222,676	1,186,407	97.0%	8,736	4,742	54.3%	3,994	45.7%
Michigan	2,479,625	2,402,282	96.9%	41,066	33,900	82.5%	7,166	17.5%
Ohio	2,673,565	2,628,588	98.3%	35,584	28,775	80.9%	6,809	19.1%
Wisconsin	1,058,255	976,525	92.3%	22,261	11,453	51.4%	10,808	48.6%
West North Central	4,090,644	3,992,432	97.6%	65,185	54,347	83.4%	10,838	16.6%
Iowa	688,949	666,348	96.7%	5,027	4,256	84.7%	771	15.3%
Kansas	727,890	721,151	99.1%	8,460	4,047	47.8%	4,412	52.2%
Minnesota	885,633	847,018	95.6%	25,168	22,806	90.6%	2,362	9.4%
Missouri	1,188,991	1,171,247	98.5%	20,006	17,742	88.7%	2,263	11.3%
Nebraska	412,992	406,869	98.5%	4,088	3,934	96.2%	154	3.8%
North Dakota	84,088	80,036	95.2%	866	824	95.1%	42	4.9%
South Dakota	102,100	99,762	97.7%	1,570	737	46.9%	833	53.1%
SOUTH	11,646,450	10,717,453	92.0%	155,807	123,689	79.4%	32,117	20.6%
South Atlantic	4,150,069	3,704,703	89.3%	102,164	79,278	77.6%	22,885	22.4%
Delaware	83,348	60,831	73.0%	1,217	412	33.9%	805	66.1%
District of Columbia	131,966	101,292	76.8%	1,607	402	25.0%	1,205	75.0%
Florida	419,894	335,124	80.0%	6,492	2,484	38.3%	4,008	61.7%
Georgia	1,216,341	1,193,472	98.1%	45,969	45,875	99.8%	94	0.2%

	Maryland	758,663	614,919	81.1%	6,069	3,846	63.4%	2,223	36.6%
	North Carolina	449,762	415,780	92.4%	21,812	11,055	50.7%	10,757	49.3%
	South Carolina	247,006	220,235	89.2%	2,228	889	39.9%	1,339	60.1%
	Virginia	490,585	440,584	89.8%	16,021	13,597	84.9%	2,424	15.1%
	West Virginia	353,385	322,465	91.3%	749	719	96.0%	30	4.0%
East South Central		2,143,336	2,089,165	97.5%	28,876	21,361	74.0%	7,515	26.0%
	Alabama	661,986	629,891	95.2%	8,861	6,883	77.7%	1,978	22.3%
	Kentucky	597,833	590,662	98.8%	4,863	3,437	70.7%	1,426	29.3%
	Mississippi	372,674	372,468	99.9%	4,748	4,170	87.8%	578	12.2%
	Tennessee	510,844	496,146	97.1%	10,404	6,871	66.0%	3,532	34.0%
West South Central		5,353,044	4,923,585	92.0%	24,767	23,050	93.1%	1,717	6.9%
	Arkansas	482,556	393,752	81.6%	1,636	1,490	91.0%	147	9.0%
	Louisiana	908,358	849,033	93.5%	713	514	72.1%	199	27.9%
	Oklahoma	806,887	776,548	96.2%	9,782	9,494	97.1%	288	2.9%
	Texas	3,155,242	2,904,251	92.0%	12,635	11,552	91.4%	1,084	8.6%
WEST		11,677,138	11,085,674	94.2%	327,323	306,518	93.6%	20,805	6.4%
Mountain		2,907,854	2,773,819	95.4%	48,557	42,173	86.9%	6,384	13.1%
	Arizona	562,046	475,197	84.5%	6,690	6,455	96.5%	235	3.5%
	Colorado	959,246	959,246	100.0%	13,867	13,867	100.0%	a	a
	Idaho	188,185	187,543	99.5%	2,668	1,599	59.9%	1,068	40.1%
	Montana	170,828	169,488	99.6%	1,336	759	56.8%	577	43.2%
	Nevada	222,820	193,896	87.3%	14,275	12,366	86.6%	1,909	13.4%
	New Mexico	353,590	335,910	95.0%	a	a	a	a	a
	Utah	424,286	424,286	100.0%	10,344	7,750	74.9%	2,595	25.1%
	Wyoming	108,533	108,332	99.8%	177	177	100.0%	a	a
Pacific		8,769,284	8,231,856	93.9%	278,766	264,345	94.8%	14,421	5.2%
	Alaska	65,200	65,200	100.0%	a	a	a	a	a
	California	7,977,596	7,521,226	94.3%	248,937	247,638	99.5%	1,300	0.5%
	Hawaii	29,771	0	0.0%	a	a	a	a	a
	Oregon	287,665	263,316	91.5%	7,639	4,634	60.7%	3,005	39.3%
	Washington	409,053	382,113	93.4%	22,190	12,074	54.4%	10,117	45.6%

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a
Insufficient Data
Regional totals may not add due to rounding.

Table 4

HOUSEHEATING CONVERSIONS TO NATURAL GAS IN 1987 BY TYPE OF FUEL

Region	Oil		Propane		Electricity		Other		Total	
	Units	%	Units	%	Units	%	Units	%	Units	%
United States	99,184	64.2	13,608	8.8	36,153	23.4	5,485	3.6	154,450	100.0
New England	17,807	96.5	200	1.1	410	2.2	28	0.2	18,445	11.9
Middle Atlantic	36,154	89.5	280	0.7	2,251	5.6	1,725	4.3	40,410	26.2
East North Central	19,201	60.4	4,132	13.0	7,632	24.0	849	2.7	31,814	20.6
West North Central	1,280	11.8	1,160	10.7	7,048	65.0	1,351	12.5	10,838	7.0
South Atlantic	16,771	73.3	647	2.8	5,303	23.2	164	0.7	22,885	14.8
East South Central	66	0.9	1,720	22.9	5,587	74.3	141	1.9	7,515	4.9
West South Central	0	0.0	646	37.6	1,061	61.8	10	0.6	1,717	1.1
Mountain	1,008	15.8	3,005	47.1	1,259	19.7	1,112	17.4	6,384	4.1
Pacific	6,897	47.8	1,818	12.6	5,602	38.8	105	0.7	14,421	9.3

[a]Other includes coal, wood, and non-classified conversions.

The respondents were asked to provide a breakdown of conversions by fuel type. Based on these data, 99,184 units, or 64 percent, were conversions from fuel oil to gas. The share of fuel oil conversions has dropped from 83 percent in 1983 and 71 percent in 1986. Electricity conversions increased by 30 percent in 1987 to 36,153 units. Propane conversions increased by 15 percent to 13,608. Consequently, electricity and propane accounted for 23 percent and 9 percent of total conversions, respectively, while other (coal, wood, and non-classified) accounted for 5,485 (4 percent). Figure 5 shows how the level of conversions from electricity has quadrupled since 1983. Figure 6 shows how the share of electric conversions among all conversions to gas has grown dramatically since 1981 from a negligible level to one quarter of all conversions.

Approximately 74 percent of the conversions were in four of the nine census divisions of the country--the Middle Atlantic, East North Central, South Atlantic and New England divisions, down from 82 percent in 1986. These same four divisions accounted for 91 percent of all conversions from fuel oil. Fuel oil decreased by 5 percent compared with last year. By contrast, the electricity conversions were greatest in the East North Central and West North Central divisions (41%), but were generally spread over most regions of the country.

Figure 5

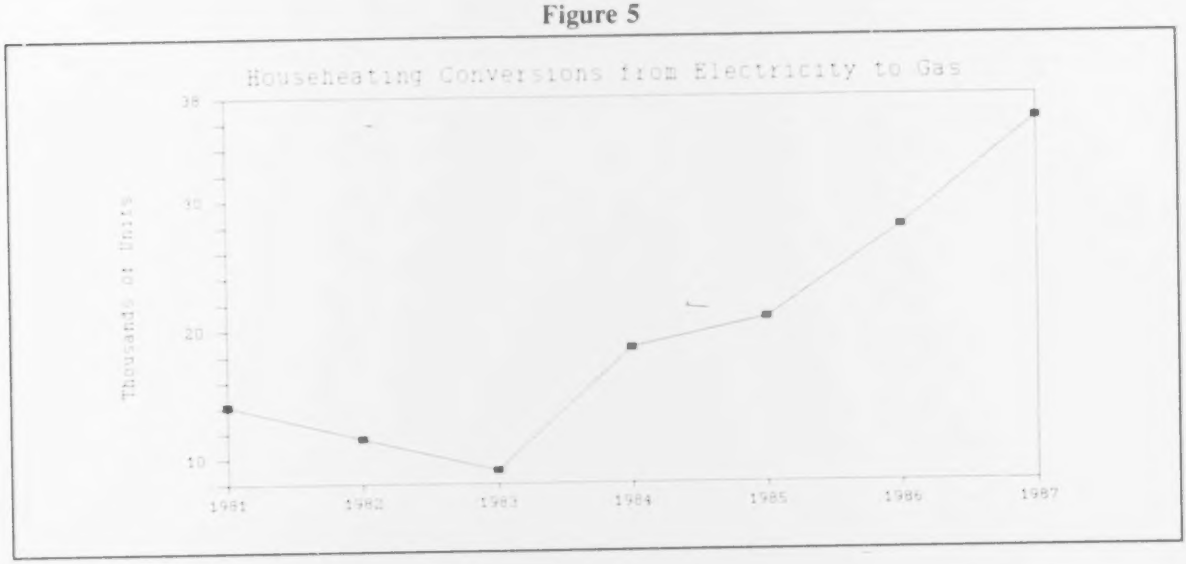
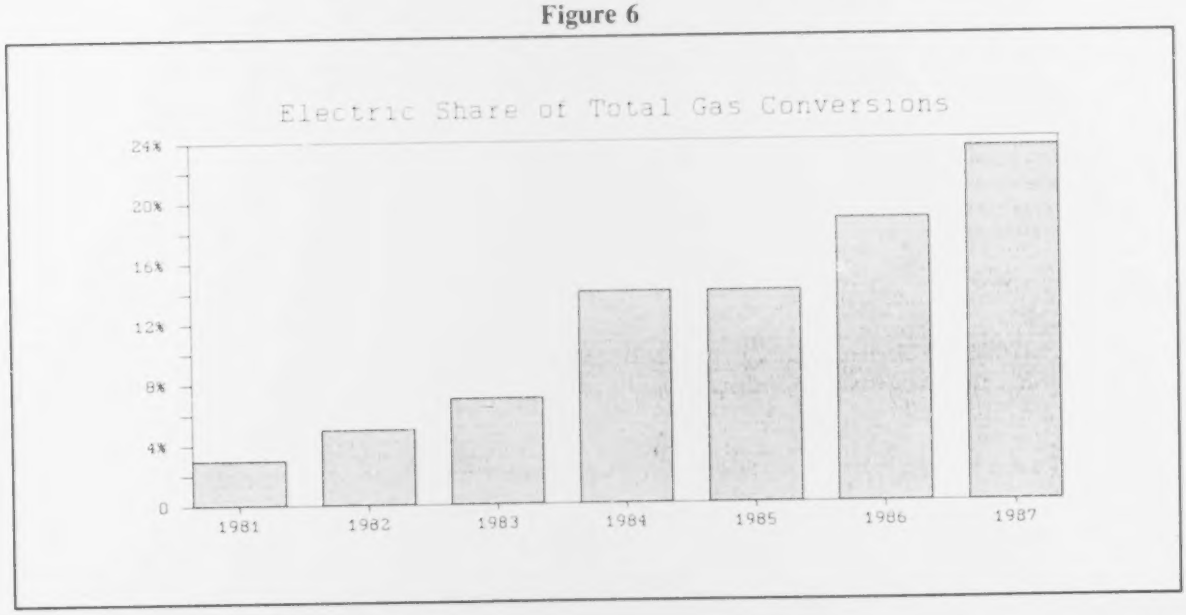


Figure 6



As part of the survey, respondents were asked to project additions to the househeating inventory from both new construction and conversions for 1988 (see Table 5). The results indicate that utilities expect to add approximately 144,820 conversions, or slightly below the actual 1987 level. New househeating additions in 1988 are projected to be about 650,000. The projection for 10 percent fewer gas househeating additions from newly constructed units is consistent with the 11 percent decline in U.S. housing starts in 1987.

Market Share

According to this year's househeating survey, the estimated market share for gas heating (as a percentage of total estimated housing units within the service areas of responding gas utilities) ranged from 36 percent to 85 percent regionally. The estimated market share as reported by each responding gas utility can be found in Appendix 1. The map in Figure 7 shows the estimated market share in the nine census divisions. The highest heating market share for natural gas is in the West North Central division (85%). The lowest market shares are in the New England (36%), Middle Atlantic (60%) and South Atlantic (55%) divisions, where oil heating is traditionally most prevalent.

Figure 7

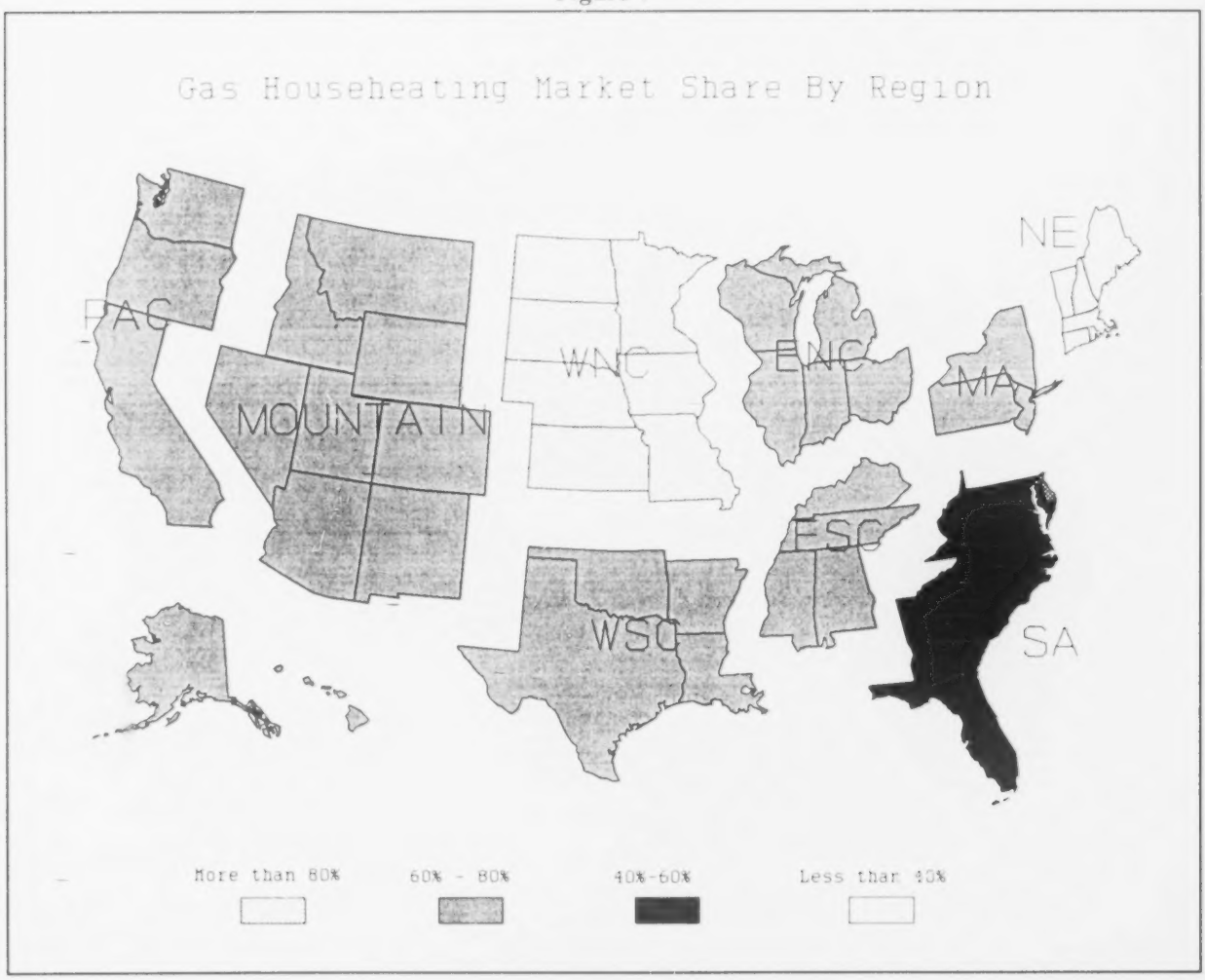


Table 5
1988 ANTICIPATED ADDITIONS
OF GAS HOUSEHEATING UNITS

Region, Division, and State	Total (100%)	New Housing Number	New Housing (%)	Conversions Number	Conversions (%)
United States	794,670	649,850	81.8%	144,820	18.2%
NORTHEAST	157,748	102,541	65.0%	55,207	35.0%
New England	40,601	21,890	53.9%	18,711	46.1%
Connecticut	9,925	6,595	66.4%	3,330	33.6%
Maine	220	150	68.2%	70	31.8%
Massachusetts	24,051	10,895	45.3%	13,156	54.7%
New Hampshire	1,020	800	78.4%	220	21.6%
Rhode Island	4,265	2,950	69.2%	1,315	30.8%
Vermont	1,120	500	44.6%	620	55.4%
Middle Atlantic	117,147	80,651	68.8%	36,496	31.2%
New Jersey	61,615	46,476	75.4%	15,139	24.6%
New York	27,891	17,868	64.1%	10,023	35.9%
Pennsylvania	27,641	16,307	59.0%	11,334	41.0%
NORTH CENTRAL	165,596	130,620	78.9%	34,976	21.1%
East North Central	127,636	100,303	78.6%	27,333	21.4%
Illinois	42,578	39,833	93.6%	2,745	6.4%
Indiana	8,211	4,468	54.4%	3,743	45.6%
Michigan	23,553	20,226	85.9%	3,327	14.1%
Ohio	31,945	24,200	75.8%	7,745	24.2%
Wisconsin	21,349	11,576	54.2%	9,773	45.8%
West North Central	37,960	30,317	79.9%	7,643	20.1%
Iowa	3,271	2,750	84.1%	521	15.9%
Kansas	8,000	4,000	50.0%	4,000	50.0%
Minnesota	12,819	12,445	97.1%	374	2.9%
Missouri	10,600	8,300	78.3%	2,300	21.7%
Nebraska	2,015	1,922	95.4%	93	4.6%
North Dakota	273	250	91.6%	23	8.4%
South Dakota	982	650	66.2%	332	33.8%
SOUTH	158,549	125,687	79.3%	32,862	20.7%
South Atlantic	109,105	85,271	78.2%	23,834	21.8%
Delaware	1,300	500	38.5%	800	61.5%
District of Columbia	1,800	400	22.2%	1,400	77.8%
Florida	5,995	2,000	33.4%	3,995	66.6%
Georgia	48,820	48,700	99.8%	120	0.2%
Maryland	7,270	5,210	71.7%	2,060	28.3%
North Carolina	22,295	10,856	48.7%	11,439	51.3%
South Carolina	2,390	1,025	42.9%	1,365	57.1%
Virginia	18,405	15,780	85.7%	2,625	14.3%
West Virginia	830	800	96.4%	30	3.6%
East South Central	22,589	16,780	74.3%	5,809	25.7%
Alabama	6,192	4,080	65.9%	2,112	34.1%
Kentucky	4,830	3,900	80.7%	930	19.3%
Mississippi	5,367	4,600	85.7%	767	14.3%
Tennessee	6,200	4,200	67.7%	2,000	32.3%
West South Central	26,855	23,636	88.0%	3,219	12.0%
Arkansas	250	100	40.0%	150	60.0%
Louisiana	790	400	50.6%	390	49.4%
Oklahoma	9,540	9,030	94.7%	510	5.3%
Texas	16,275	14,106	86.7%	2,169	13.3%
WEST	312,777	291,002	93.0%	21,775	7.0%
Mountain	54,528	45,034	82.6%	9,494	17.4%
Arizona	8,885	8,100	91.2%	785	8.8%
Colorado	15,428	15,428	100.0%	0	0.0%
Idaho	3,020	1,700	56.3%	1,320	43.7%
Montana	813	755	92.9%	58	7.1%
Nevada	13,010	11,148	85.7%	1,862	14.3%
New Mexico	a	a	a	a	a
Utah	13,188	7,719	58.5%	5,469	41.5%
Wyoming	184	184	100.0%	a	a
Pacific	258,249	245,968	95.2%	12,281	4.8%
Alaska	a	a	a	a	a
California	231,803	230,483	99.4%	1,320	0.6%
Hawaii	a	a	a	a	a
Oregon	7,417	4,500	60.7%	2,917	39.3%
Washington	19,029	10,985	57.7%	8,044	42.3%

a
Insuffient data.

IV. Residential Gas Consumption

Gas Consumption Per Unit

Respondents to the survey estimated the average annual gas consumption for both single and multi-family dwellings. Utilities representing 87 percent of all gas househeating customers responded to this portion in the survey. These responses were then used to develop the U.S. and regional average estimates on per unit gas use. Both categories were weighted by the number of residential gas customers for each responding utility in each state. In addition, the multi-family data represented a weighted average of dwellings with 2-4 units, and dwellings with 5 or more units (see Table 6).

Due to changes in the reporting methods of some utilities, particularly in the definition of base load and multi-family gas use and consumption per unit (as well as annual changes in heating degree day totals), consumption data from year to year are not always comparable. With this caveat in mind, a review of 1987 combined average consumption data (U.S. average weighted by customer and dwelling type) indicated that total per unit gas consumption was 85.1 Mcf for all units, while househeating was 56.5 Mcf and base load consumption was 28.6 Mcf. In single family dwellings, gas consumption for househeating was 71.8 Mcf, while base load consumption was 33.4 Mcf. By comparison the average multi-family dwelling unit in buildings with 2-4 units consumed 49.0 Mcf and 26.6 Mcf, respectively, for househeating and base load use. In dwellings with more than 5 units, gas consumption per unit for househeating was 42.8 Mcf and base load consumption per unit was 24.0 Mcf.

Climatic conditions have the most significant impact on gas use for househeating purposes, but the size and thermal integrity of the structure must also be considered. Reflecting these factors, single family unit consumption was highest for househeating in the Northeast region at 96.4 Mcf and lowest in the West at 45.1 Mcf. Gas consumption for househeating in multi-family dwellings with 2-4 units followed a similar pattern with per unit consumption in the Midwest region at 67.2 Mcf, with a low of 27.2 Mcf in the West region. Table 6 includes weather data for each region in the form of annual heating degree days for calendar year 1987 and the 30-year normal heating degree days. The degree-day data are weighted by gas househeating customers. Heating degree-day accumulation was down in 1987 compared with the 30-year normal and in all regions, except for the West, relative to 1986. Thus, while the U.S. total was higher in 1987 than in 1986, the colder climate regions were warmer than in 1986.

Gas consumption for base load use, which may include water heating, cooking, clothes drying and air conditioning, will vary with the size and type of appliance in the unit. Base load consumption also has some seasonality reflecting lifestyle preferences under the various climatic conditions. For single family dwellings, base load consumption was lowest in the West region at 30.6 Mcf, and highest in the Northeast region at 42 Mcf. Base load consumption per unit for multi-family dwellings of 2-4 units ranged from 23.6 Mcf in the West to 32.2 Mcf in the Northeast.

Table 6

1987 AVERAGE ANNUAL GAS CONSUMPTION/UNIT[a] BY REGION (Mcf)

Region	Single Family	Multi-Family 2-4 Units	Multi-Family 5+ Units	Combined[b] Average	Heating Degree Days[c] 1987	Heating Degree Days[c] 30-Year
Northeast						
Heating	96.4	66.7	58.6	78.3	5,470	5,719
Base load	41.3	31.5	28.3	34.9		
Total	137.7	98.2	86.9	113.2		
Midwest						
Heating	92.2	67.2	58.5	75.0	5,565	6,280
Base load	33.9	26.6	23.5	28.7		
Total	85.2	69.5	65.6	74.7		
South						
Heating	55.7	42.3	40.1	47.1	2,712	2,484
Base load	29.5	27.2	25.5	27.6		
Total	85.2	69.5	65.6	74.7		
West						
Heating	45.1	27.2	21.6	32.2	2,211	2,484
Base load	29.3	22.9	20.7	24.6		
Total	74.4	50.1	42.3	56.8		
U.S. Average						
Heating	71.8	49.0	42.8	56.5	3,987	4,264
Base load	33.4	26.6	24.0	28.6		
Total	105.2	75.6	66.8	85.1		

[a]Results for 1987 are based on responses from 170 different markets.

[b]Weighted by customer and dwelling type.

[c]Calendar year heating degree days as reported are then weighted by gas househeating customers (see Appendix 1 for detailed definitions). The 30-year normal are also weighted by gas househeating customers as opposed to total population.

Conservation

Companies representing 75 percent of gas househeating customers indicated that in 1987 conservation, measured as the total percentage decline in consumption per househeating customer not explained by the weather, has reduced consumption to an average of 27.2 percent below the pre-1973 level. This is about even with the 1986 level. Conservation percentages reported by each company were weighted by househeating customer data from each company to derive regional and national conservation estimates. The magnitude of conservation ranged from a high of 32.9 percent below the pre-1973 level of consumption in the Pacific division to a low of 20.0 percent in the New England division (see Table 7). These numbers are nearly identical with last year.

Again this year the survey included a question on base load conservation. Almost 138 companies, primarily in the Midwest and Northeast regions, indicated that base load consumption per customer had moderated since 1973--mostly through the introduction of more efficient appliances, lower water heater settings, water heater insulation, and pilotless ignitions. However, fewer than 30 companies responded with quantitative data describing base load conservation (as the change in third quarter consumption per customer over a given period of time, i.e., 1973 and 1986). All of the companies that responded to this question also indicated that their base load consumption did not measurably vary with heating degree days. This response probably reflects the difficulty in developing reliable data on base load consumption as much as it does the fact that base load consumption is a smaller and less variable component of overall average gas consumption per home.

Table 7.

1987 AVERAGE CONSERVATION BY REGION
(Percent Decline From 1973 Baseline)

Region	Conservation[a] %
Northeast	24.0
New England	20.0
Middle Atlantic	24.8
Midwest	28.5
East North Central	28.5
West North Central	28.5
South	22.9
South Atlantic	22.4
East South Central	23.1
West	32.4
Mountain	30.8
Pacific	32.9
United States	27.2

[a]The total percent decline in consumption normalized for weather from the pre-embargo 1973 baseline. Results for 1985 are based on individual company responses from 132 different markets and are weighted by househeating customers.

Prices/Heating Bills

Strongly correlated with the natural gas price is the annual gas househeating bill for a single family home shown in Table 8. This measure declined in six of the nine divisions. These reductions ranged from 2.0 percent in the Middle Atlantic division to 12.5 percent in the South Atlantic division. Nationally, the average gas househeating bill declined from $379 to $372 or about 2 percent.

Natural gas prices declined in seven of the nine census divisions in 1987. The largest declines, depicted in Table 9, were registered in the New England division which decreased $0.52/MMBtu from $7.03/MMBtu or 7.2 percent and in the South Atlantic division, which declined $0.47/MMBtu from $6.31/MMBtu. The only increases were in the Mountain and West North Central divisions which showed an increase of $0.19/MMBtu and $0.09/MMBtu, respectively. Overall, the average U.S. gas price was down from $5.35/MMBtu to $5.18/MMBtu or 3.2 percent. In contrast, this compares favorably to an increase of $0.50/MMBtu to $20.55/MMBtu or 2.5 percent in the average U.S. price of electricity. Fuel oil prices showed an even larger percentage increase, 6.5 %, to $5.47/MMBtu. Propane prices rose negligibly to $9.02/MMBtu.

Table 8

1986 AND 1987 GAS HOUSEHEATING BILL BY DIVISION[a]

Division	1986 Gas Heating Bill[b]	1987 Gas Heating Bill	% Change
United States	$378.78	$371.92	-1.8%
New England	$679.10	$622.01	-8.5%
Middle Atlantic	$572.86	$561.25	-2.0%
East North Central	$524.24	$491.15	-6.3%
West North Central	$380.10	$363.35	-4.4%
South Atlantic	$401.95	$351.57	-12.5%
East South Central	$307.89	$312.18	1.4%
West South Central	$251.48	$243.02	-3.4%
Mountain	$306.51	$318.12	3.8%
Pacific	$186.58	$192.61	3.2%

[a]Weighted by househeating customers.

[b]Revised.

Table 9

Residential Fuel Price Comparisons[a]

DIVISION	1986[b]	1987	% Change
United States			
Gas	5.35	5.18	-3.2%
Electricity	20.05	20.55	2.5%
Propane	9.01	9.02	0.1%
Fuel Oil	5.14	5.47	6.5%
New England			
Gas	7.03	6.52	-7.2%
Electricity	23.96	24.21	1.0%
Propane	9.98	10.40	4.2%
Fuel Oil	5.38	6.02	12.0%
Middle Atlantic			
Gas	6.22	5.81	-6.6%
Electricity	22.31	21.50	-3.7%
Propane	10.19	10.85	6.4%
Fuel Oil	5.00	5.67	13.3%
East North Central			
Gas	5.29	5.17	-2.3%
Electricity	18.05	18.48	2.4%
Propane	8.50	8.18	-3.8%
Fuel Oil	5.27	5.54	5.1%
West North Central			
Gas	4.21	4.30	2.2%
Electricity	17.86	18.36	2.8%
Propane	6.07	6.26	3.2%
Fuel Oil	4.92	4.81	-2.2%
South Atlantic			
Gas	6.31	5.84	-7.5%
Electricity	18.44	18.83	2.1%
Propane	10.00	9.27	-7.3%
Fuel Oil	5.12	5.40	5.5%
East South Central			
Gas	4.95	4.84	-2.2%
Electricity	16.42	15.73	-4.2%
Propane	8.33	8.53	2.4%
Fuel Oil	4.45	4.30	-3.3%
West South Central			
Gas	5.25	4.98	-5.2%
Electricity	20.30	21.51	6.0%
Propane	8.19	7.67	-6.3%
Fuel Oil	3.70	4.01	8.3%
Mountain			
Gas	4.63	4.82	4.2%
Electricity	21.28	22.61	6.2%
Propane	8.53	9.06	6.2%
Fuel Oil	3.75	3.71	-1.0%
Pacific			
Gas	5.07	4.99	-1.6%
Electricity	22.80	23.28	2.1%
Propane	13.09	12.71	-2.9%
Fuel Oil	6.70	7.02	4.8%

[a] Represents final price to consumers, including sales taxes. Weighted by househeating customers.

[b] Gas Prices Revised.

Gas Cooling

For only the second time the annual househeating questionnaire contained a section on the residential gas space cooling market. The survey was intended to develop a basic data base on the installed residential gas cooling capacity, and to derive a general impression of the extent to which gas utilities have cooling data.

Fifty-two of the 151 companies that replied to the 1987 Househeating Survey provided at least some quantitative responses. The quantitative part of the cooling survey requested data on the installed tonnage, number of units and annual gas sales volumes for single family and multi-family homes.

Installed residential gas cooling tonnage totaled 400,000 tons as of 1986 (see Table 10). The number of installed residential gas units, as reported by a slightly different sub-sample, totalled 106,580 as of 1986. The fact that each total reflects a different set of responding companies does not allow for the totals to be readily cross-checked. Both numbers are lower than those reported last year.

Totals for 1987 alone were slightly sketchier. Installed new tonnage was 6,500 tons and installed units totalled about 1,500 in 1987. The total in place volume of gas for cooling, as reported by the sub-sample, totalled 11 billion cubic feet (Bcf), which is considerably higher than reported last year. The West South Central and South Atlantic account for 60 percent of the estimated gas volumes.

FOOTNOTES

1 Source: U.S. Department of Commerce, Bureau of the Census, Construction Reports--Housing Starts, Series C-20, April 1988.

2 At most utilities a residential customer is defined as an individual or organization purchasing gas for domestic purposed (heating, cooking) at one location under one rate classification, i.e., a meter represents a single customer.

3 Because of inconsistencies in the definition of a completed housing unit (used by the Bureau of the Census) and an on-line gas customer (used by a gas utility), the number of gas heated housing units added from new construction reported in the survey does not match the Census figures shown in Table 1.

Table 10

EXISTING RESIDENTIAL GAS COOLING CAPACITY

	Tonnage	Units
New England	738	189
Middle Atlantic	49,317	4,550
East North Central	33,495	24,251
West North Central	34,059	10,722
South Atlantic	77,929	26,502
East South Central	39,720	9,789
West South Central	162,878	26,997
Mountain	1,958	502
Pacific	234	3,078
U.S.	400,328	106,580

APPENDIX 1

1987 HOUSEHEATING CUSTOMER AND CONSUMPTION DATA BY COMPANY

This appendix presents gas househeating data obtained from a survey of 151 companies on a regional, state and company-by-company basis. column 1 of the Appendix shows reported residential and househeating customers. Residential and househeating customer data in the 1987 survey have been reconciled with the A.G.A. Uniform Statistical Reports, which form the basis of the A.G.A. Gas Facts publication. A gas customer is equal to a meter for billing purposes, while a househeating unit refers to the number of actual residences which use gas for space heating. Column 2 provides heating and average base load consumption per customer. Column 3 shows the gas heating market share, defined as the percentage of total dwelling units in the franchise areas of gas utilities that are served by gas for househeating as opposed to other primary heating fuels.

The market share should not be confused with househeating saturation, which is the number of gas househeating customers on a given system. It should also be noted that reported market share figures, in particular, may be inconsistent in some cases due to different interpretations for an individual utility from year to year. This question was revised in 1981 so that data reported in subsequent years may remain consistent. Column 4 shows the number of heating degree days (a heating degree day is a measure of the coldness of the weather, based on the extent to which the daily mean temperature falls below a reference temperature, usually 65° F).

APPENDIX 1 -- CUSTOMERS AND CONSUMPTION

DIVISION / STATE / COMPANY	RESIDENTIAL CUSTOMERS YEAR-END 1987	HOUSEHEATING CUSTOMERS YEAR-END 1987	CONSUMPTION PER SINGLE FAMILY HOME (MCF/YR) HEATING	CONSUMPTION PER SINGLE FAMILY HOME (MCF/YR) BASELOAD	GAS-HTG MKT. SHARE VS. ALL FUELS	HEATING DEGREE DAYS 1987	HEATING DEGREE DAYS 30 YEAR NORMAL
NEW ENGLAND							
CONNECTICUT							
NORTHEAST UTILITIES	151,356	105,745	88.0	37.0	23.0%	6,046	6,223
CONNECTICUT NATURAL GAS	123,120	91,016	84.0	35.0	38.0%	6,193	6,174
SOUTHERN CONNECTICUT GAS CO.	134,122	78,774	77.4	25.0	23.0%	5,401	5,501
MAINE							
NORTHERN UTILITIES	12,000	5,000	89.0	36.0	5.0%	6,871	7,116
MASSACHUSETTS							
COLONIAL GAS CO.	43,835	36,910	85.0	35.0	32.0%	6,466	6,481
COMMONWEALTH GAS CO.	197,788	163,625	120.0	30.0	41.0%	6,588	6,533
ESSEX COUNTY GAS CO.	31,018	23,767	80.0	30.0	NA	6,713	6,924
BOSTON GAS CO.	457,035	245,939	106.0	36.0	37.0%	5,801	5,634
LOWELL GAS CO.	54,860	50,922	86.0	39.0	52.0%	6,499	6,452
BAY STATE GAS CO.	197,700	149,100	89.0	36.0	36.0%	5,980	5,940
FALL RIVER GAS CO.	~~38~~,700	33,220	100.0	30.0	NA	6,085	6,077
NEW HAMPSHIRE							
NORTHERN UTILITIES	10,000	8,200	89.0	36.0	14.0%	6,135	6,330
RHODE ISLAND							
PROVIDENCE GAS CO.	127,827	94,331	90.0	30.0	44.0%	5,724	5,938
VALLEY GAS CO.	47,689	34,970	75.0	20.0	45.0%	6,581	6,466
VERMONT							
VERMONT GAS SYSTEMS	15,553	13,723	93.0	37.0	NA	7,434	7,876
MIDDLE ATLANTIC							
NEW JERSEY							
PUBLIC SERVICE ELECTRIC & GAS	1,265,315	819,460	105.0	35.0	64.0%	4,717	4,990
SOUTH JERSEY GAS CO.	175,858	145,665	71.7	30.2	34.0%	4,609	4,829
ELIZABETHTOWN GAS CO.	201,048	127,712	114.1	3.0	62.0%	4,823	4,972
NEW JERSEY NATURAL GAS COMPANY	258,528	223,289	84.4	35.8	48.0%	5,289	5,323
NEW YORK							
ORANGE & ROCKLAND UTILITIES	90,960	85,816	112.0	36.0	51.0%	5,972	5,947
BROOKLYN UNION GAS CO.	1,056,810	359,106	92.0	40.0	52.0%	4,639	4,900
LONG ISLAND LIGHTING CO.	378,339	195,668	115.4	36.5	22.4%	4,799	5,333
NATIONAL FUEL GAS DIST.	467,260	450,007	77.4	46.1	84.4%	6,098	6,789
CENTRAL HUDSON GAS & ELECTRIC	47,731	33,477	63.0	50.0	15.6%	6,455	6,379
ROCHESTER GAS & ELECTRIC	231,292	206,458	85.7	34.4	NA	6,439	6,752
ST. LAWRENCE GAS CO.	10,174	9,307	124.0	26.0	81.0%	8,093	8,311
COLUMBIA GAS OF NEW YORK	59,964	55,172	97.2	32.7	74.1%	6,842	7,282
NEW YORK STATE ELECTRIC & GAS	116,735	108,515	104.0	23.8	NA	6,798	7,344
NIAGARA MOHAWK POWER CO.	411,566	255,170	92.1	51.9	60.0%	6,838	6,900
CONSOLIDATED EDISON CO.	932,502	178,920	125.0	83.0	49.2%	4,101	4,335
PENNSYLVANIA							
PENNSYLVANIA GAS & WATER	110,592	89,451	137.0	24.0	39.0%	6,268	6,300
UGI CORPORATION	191,099	124,790	78.8	28.4	24.9%	5,362	5,480
PEOPLES NATURAL GAS CO.	304,020	296,769	90.0	50.0	NA	5,465	5,950
PHILADELPHIA GAS WORKS	508,038	402,673	113.0	48.0	72.0%	4,498	4,600
PHILADELPHIA ELECTRIC CO.	299,306	231,618	90.0	28.0	32.0%	4,936	4,992
EQUITABLE RESOURCES	241,915	241,915	100.7	33.9	97.0%	5,465	5,950
NORTH PENN GAS CO.	28,288	28,187	76.0	38.0	NA	6,969	7,332
PIKE COUNTY LIGHT & POWER	900	848	94.0	41.0	32.0%	5,972	5,947
COLUMBIA GAS OF PA	308,318	292,527	94.5	31.0	68.5%	5,574	5,914
NATIONAL FUEL GAS DIST.	186,263	184,125	78.3	51.4	80.2%	5,876	6,577
EAST NORTH CENTRAL							
ILLINOIS							
CENTRAL ILLINOIS PUBLIC SERV.	140,316	137,102	96.9	22.6	68.0%	4,929	5,654
NORTH SHORE GAS CO.	102,776	98,133	123.0	41.0	92.0%	5,735	6,455
NORTHERN ILLINOIS GAS CO.	1,433,378	1,374,642	107.0	30.0	86.0%	5,557	6,177
UNITED CITIES GAS CO.	17,483	17,483	50.0	35.0	NA	4,290	4,729
ILLINOIS POWER CO.	350,334	340,933	79.0	28.5	84.2%	4,777	5,474
PEOPLES GAS LIGHT & COKE	802,930	578,857	125.0	40.0	94.0%	5,672	6,455
IOWA-ILLINOIS GAS & ELECTRIC	58,266	56,112	67.0	31.1	85.0%	5,315	6,274
INDIANA							
CITIZENS GAS & COKE	209,871	201,204	95.0	39.0	74.0%	5,127	5,577
LAWRENCEBURG GAS CO.	3,738	3,696	85.0	40.0	NA	4,745	5,247
HOOSIER GAS CORP.	20,580	20,401	74.9	24.0	56.0%	4,284	4,672
INDIANA GAS CO.	302,412	297,711	85.8	28.2	49.8%	5,027	5,650
SOUTHERN INDIANA GAS & ELECTRIC	62,658	61,743	100.9	38.8	54.0%	4,290	4,755
OHIO VALLEY GAS CORP.	21,942	21,568	105.0	26.0	87.0%	5,090	5,801
NORTHERN INDIANA PUBLIC SERVICE	519,923	500,559	83.0	35.0	87.0%	6,268	6,377
KOKOMO GAS & FUEL CO.	26,668	26,269	84.9	24.0	81.2%	5,222	5,869
MICHIGAN							

APPENDIX 1 -- CUSTOMERS AND CONSUMPTION

DIVISION / STATE	COMPANY	RESIDENTIAL CUSTOMERS YEAR-END 1987	HOUSEHEATING CUSTOMERS YEAR-END 1987	CONSUMPTION PER SINGLE FAMILY HOME (MCF/YR) HEATING	CONSUMPTION PER SINGLE FAMILY HOME (MCF/YR) BASELOAD	GAS-HTG MKT. SHARE VS. ALL FUELS	HEATING DEGREE DAYS 1987	HEATING DEGREE DAYS 30 YEAR NORMAL
	MICHIGAN GAS CO.	68,474	67,668	76.2	31.7	65.1%	5,868	6,541
	WISCONSIN PUBLIC SERVICE	4,436	4,240	76.0	30.0	NA	6,046	8,022
	MICHIGAN GAS UTILITIES CO.	104,922	103,207	83.5	28.2	71.9%	6,024	6,584
	MICHIGAN CONSOLIDATED GAS	996,314	957,553	110.0	45.0	85.0%	6,074	6,794
	CONSUMERS POWER CO.	1,192,756	1,160,407	83.3	40.9	90.0%	6,214	6,619
OHIO								
	EAST OHIO GAS CO.	945,299	936,010	100.0	40.0	62.0%	5,832	6,255
	NATIONAL GAS & OIL CORP.	17,797	17,797	65.2	31.0	NA	6,075	6,089
	CINCINNATI GAS & ELECTRIC	277,565	258,091	85.0	40.0	NA	4,745	5,247
	OHIO GAS CO.	28,943	28,943	90.0	35.0	78.0%	5,858	6,350
	DAYTON POWER & LIGHT	250,120	245,737	76.0	30.0	NA	5,293	5,771
	COLUMBIA GAS OF OHIO	1,033,258	1,023,551	85.7	29.2	74.6%	5,564	5,987
	WEST OHIO GAS CO.	50,766	49,817	95.5	24.5	87.5%	5,192	5,910
WISCONSIN								
	WISCONSIN NATURAL GAS CO.	221,659	208,308	107.2	24.2	73.0%	6,291	7,460
	WISCONSIN SOUTHERN GAS CO.	36,938	35,827	88.0	29.0	79.0%	6,658	7,113
	WISCONSIN PUBLIC SERVICE	147,587	140,552	76.0	30.0	NA	6,046	8,022
	WISCONSIN GAS CO.	398,530	356,815	91.0	31.0	78.0%	6,185	7,326
	WISCONSIN FUEL & LIGHT CO.	36,390	34,742	71.7	29.2	76.0%	6,778	8,146
	SUPERIOR WATER, LIGHT & POWER	8,010	5,880	119.8	37.9	74.0%	8,262	9,901
	WISCONSIN POWER & LIGHT CO.	102,074	95,962	76.8	25.8	31.0%	6,520	7,541
	MADISON GAS & ELECTRIC	70,480	64,677	73.8	28.7	72.8%	6,529	7,642
WEST NORTH CENTRAL								
IOWA								
	MIDWEST GAS COMPANY							
	IOWA PUBLIC SERVICE CO.	234,733	223,658	72.6	31.7	NA	5,760	7,013
	IOWA-ILLINOIS GAS & ELECTRIC	148,883	144,097	72.0	32.6	86.0%	5,532	6,505
	CEDAR FALLS UTILITIES	9,062	8,727	97.0	NA	75.0%	5,568	6,260
	IOWA ELECTRIC LIGHT & POWER	105,764	103,439	71.0	26.0	NA	5,326	6,183
KANSAS								
	K N ENERGY, INC.	23,067	23,067	68.0	38.0	NA	NA	NA
	ARKANSAS LOUISIANA GAS CO.	18,947	13,679	53.0	32.0	44.5%	5,181	4,787
	MIDWEST ENERGY, INC.	8,993	8,993	91.4	30.8	90.0%	4,959	5,300
	KPL GAS SERVICE	517,965	517,965	90.0	30.0	90.0%	4,567	5,319
MINNESOTA								
	IOWA PUBLIC SERVICE CO.	54,729	54,395	78.0	32.0	NA	6,371	7,966
	MINNEGASCO, INC.	420,580	411,130	131.0	35.0	82.0%	6,344	8,108
	NORTHERN STATES POWER CO.	232,273	216,253	91.2	16.1	72.0%	6,349	8,007
	CITY OF DULUTH	19,775	13,339	140.0	45.0	85.0%	8,224	9,901
	AUSTIN UTILITIES	8,579	8,731	125.0	30.0	98.0%	6,980	7,620
MISSOURI								
	CITY OF SPRINGFIELD	53,730	53,730	70.0	24.0	87.0%	4,252	4,660
	ASSOCIATED NATURAL GAS CO.	37,705	37,705	83.3	NA	NA	3,364	3,948
	LACLEDE GAS CO.	546,479	530,945	62.0	38.8	77.1%	4,209	4,938
	KPL GAS SERVICE	402,983	402,983	90.0	30.0	90.0%	4,567	5,319
NEBRASKA								
	METROPOLITAN UTILITIES DISTRICT	130,026	127,145	60.0	43.0	85.0%	5,227	6,592
	KPL GAS SERVICE	3,096	3,096	90.0	30.0	90.0%	4,567	5,319
	MINNEGASCO, INC.	106,072	104,460	74.0	30.0	94.0%	4,888	6,093
	K N ENERGY, INC.	79,429	79,429	69.0	28.0	NA	NA	NA
	IOWA PUBLIC SERVICE CO.	3,479	3,406	63.0	29.7	NA	5,676	6,947
	HASTINGS UTILITIES	7,960	7,960	NA	NA	99.0%	4,588	5,927
	NORTHWESTERN PUBLIC SERVICE	32,393	32,258	78.0	39.0	80.0%	5,560	6,638
NORTH DAKOTA								
	MONTANA-DAKOTA UTILITIES CO.	63,216	62,499	70.8	28.9	91.0%	7,146	9,199
	NORTHERN STATES POWER CO.	19,785	16,502	81.4	18.9	46.0%	7,223	9,323
SOUTH DAKOTA								
	MONTANA-DAKOTA UTILITIES CO.	27,094	26,609	55.1	27.1	NA	6,059	7,301
	MINNEGASCO, INC.	36,319	36,066	89.0	32.0	90.0%	6,378	7,816
	IOWA PUBLIC SERVICE CO.	7,316	6,997	66.6	26.4	NA	5,676	6,947
	NORTHWESTERN PUBLIC SERVICE	25,574	24,426	88.0	29.4	99.0%	6,211	8,057
SOUTH ATLANTIC								
DELAWARE								
	DELMARVA POWER & LIGHT CO.	73,803	53,865	81.0	28.3	41.0%	4,866	4,952
DIST. OF COLUMBIA								
	WASHINGTON GAS LIGHT CO	131,966	101,292	86.0	33.0	72.1%	4,103	3,873
FLORIDA								
	PEOPLES GAS SYSTEM, INC.	149,935	119,894	19.0	18.0	37.0%	152	199

APPENDIX 1 -- CUSTOMERS AND CONSUMPTION

DIVISION / STATE / COMPANY	RESIDENTIAL CUSTOMERS YEAR-END 1987	HOUSEHEATING CUSTOMERS YEAR-END 1987	CONSUMPTION PER SINGLE FAMILY HOME (MCF/YR) HEATING	CONSUMPTION PER SINGLE FAMILY HOME (MCF/YR) BASELOAD	GAS-HTG MKT. SHARE VS. ALL FUELS	HEATING DEGREE DAYS 1987	HEATING DEGREE DAYS 30 YEAR NORMAL
GEORGIA							
UNITED CITIES GAS CO.	61,907	61,907	35.0	35.0	NA	2,158	2,356
ATLANTA GAS LIGHT COMPANY	971,406	951,978	47.0	40.0	73.0%	2,760	2,934
MARYLAND							
BALTIMORE GAS & ELECTRIC	482,023	352,640	70.6	38.7	41.0%	4,608	4,706
WASHINGTON GAS LIGHT CO.	232,775	225,422	80.8	33.2	68.0%	4,103	3,900
COLUMBIA GAS OF MD	25,847	22,253	79.9	23.0	45.0%	5,612	6,002
NORTH CAROLINA							
NORTH CAROLINA NATURAL GAS	62,129	59,846	66.0	34.0	70.0%	2,883	2,750
PIEDMONT NATURAL GAS CO.	170,186	153,167	60.9	20.5	25.0%	3,703	3,702
PUBLIC SERVICE OF NORTH CAROLIN	178,951	167,051	79.2	23.9	29.0%	3,575	3,337
CITY OF WILSON	6,162	5,825	66.2	NA	23.0%	NA	NA
SOUTH CAROLINA							
UNITED CITIES GAS CO.	3,639	3,639	40.0	35.0	NA	3,329	3,239
PEOPLES GAS CO. OF S.C.	7,025	6,627	NA	NA	NA	2,854	2,507
SOUTH CAROLINA ELECTRIC & GAS	177,235	156,852	47.2	13.8	40.1%	2,556	2,388
PIEDMONT NATURAL GAS CO.	49,634	44,670	57.7	21.3	19.0%	3,524	3,404
VIRGINIA							
ROANOKE GAS CO.	35,852	33,824	NA	NA	NA	4,312	4,315
CITY OF DANVILLE	14,146	12,728	86.3	20.5	71.5%	4,060	3,856
UNITED CITIES GAS CO.	12,248	12,248	50.0	35.0	NA	4,312	4,315
VIRGINIA NATURAL GAS	160,353	135,648	45.0	42.0	42.0%	3,562	3,424
CITY OF CHARLOTTESVILLE							
COLUMBIA GAS OF VA	38,190	37,253	74.0	26.4	37.8%	4,684	4,735
WASHINGTON GAS LIGHT CO.	187,545	177,553	74.7	29.3	56.5%	4,103	3,873
CITY OF RICHMOND	66,588	53,262	56.2	34.0	NA	4,061	3,993
WEST VIRGINIA							
HOPE GAS CO.	100,989	96,242	76.0	31.1	NA	4,800	4,957
MOUNTAINEER GAS CO.	181,691	161,705	76.0	24.0	NA	NA	NA
EAST SOUTH CENTRAL							
ALABAMA							
CITY OF FLORENCE	7,615	7,615	NA	NA	50.0%	2,653	NA
CITY OF HUNTSVILLE	24,782	24,782	NA	NA	65.0%	3,075	3,341
SOUTHEAST ALABAMA GAS	31,231	25,025	66.0	18.0	NA	1,821	1,976
ALABAMA GAS CORP.	378,017	362,644	54.0	29.0	72.0%	2,523	2,585
DECATUR UTILITIES	4,360	4,315	47.0	11.0	22.0%	2,876	3,302
KENTUCKY							
LOUISVILLE GAS & ELECTRIC	219,485	217,583	65.0	34.0	NA	4,080	4,525
UNION LIGHT, HEAT & POWER	57,594	53,740	85.0	40.0	NA	4,745	5,247
COLUMBIA GAS OF KY	104,838	104,188	79.4	25.3	70.5%	4,525	4,772
DELTA NATURAL GAS CO.	25,080	25,080	56.0	30.0	NA	4,372	4,804
WESTERN KENTUCKY GAS CO.	127,051	127,051	69.8	23.7	NA	3,833	4,380
MISSISSIPPI							
ENTEX, INC.	97,178	97,012	38.0	29.0	90.4%	2,469	2,462
MISSISSIPPI VALLEY GAS CO.	202,881	202,881	73.9	30.5	93.0%	NA	NA
TENNESSEE							
NASHVILLE GAS CO.	65,113	63,810	85.0	30.0	26.0%	3,486	3,756
JACKSON UTILITY DIVISION							
MIDDLE TENNESSEE NATURAL GAS	13,652	13,060	56.0	12.0	65.0%	3,486	3,696
MEMPHIS LIGHT, GAS & WATER	233,560	225,152	81.0	36.0	76.0%	2,820	3,227
UNITED CITIES GAS CO.	45,763	45,763	45.0	35.0	NA	3,785	3,658
WEST SOUTH CENTRAL							
ARKANSAS							
ASSOCIATED NATURAL GAS CO.	17,292	17,292	54.6	24.0	NA	3,364	3,948
ARKANSAS WESTERN GAS CO.	69,556	68,165	51.0	34.0	45.0%	4,188	3,948
ARKANSAS LOUISIANA GAS CO.	359,852	273,488	51.8	31.2	39.7%	2,762	3,152
ARKANSAS OKLAHOMA GAS CORP.	33,833	33,156	47.0	23.0	NA	3,101	3,477
LOUISIANA							
LOUISIANA GAS SERVICE CO.	216,863	216,863	34.4	27.7	NA	NA	NA
TRANS LOUISIANA	60,950	58,512	44.0	24.0	70.0%	1,960	1,961
NEW ORLEANS PUBLIC SERVICE	151,099	149,588	46.7	19.1	NA	1,203	1,296
ARKANSAS LOUISIANA GAS CO.	127,012	101,736	48.7	29.3	34.3%	2,201	2,269
ENTEX, INC.	118,655	103,385	40.0	25.0	69.0%	1,479	1,733
OKLAHOMA							
KPL GAS SERVICE	32,359	32,359	90.0	30.0	85.0%	4,567	5,319
ARKANSAS LOUISIANA GAS CO.	104,819	81,025	40.9	35.1	44.0%	3,432	3,735
ARKANSAS OKLAHOMA GAS CORP.	13,355	13,088	46.0	22.0	NA	3,101	3,477
OKLAHOMA NATURAL GAS CO.	582,191	581,124	63.6	31.0	88.0%	3,404	3,443
LONE STAR GAS CO.	33,470	29,789	55.0	25.0	60.0%	2,362	2,407
TEXAS							

APPENDIX 1 -- CUSTOMERS AND CONSUMPTION

DIVISION / STATE / COMPANY	RESIDENTIAL CUSTOMERS YEAR-END 1987	HOUSEHEATING CUSTOMERS YEAR-END 1987	CONSUMPTION PER SINGLE FAMILY HOME (MCF/YR) HEATING	CONSUMPTION PER SINGLE FAMILY HOME (MCF/YR) BASELOAD	GAS-HTG MKT. SHARE VS. ALL FUELS	HEATING DEGREE DAYS 1987	HEATING DEGREE DAYS 30 YEAR NORMAL
LONE STAR GAS CO.	1,082,208	963,165	55.0	25.0	49.0%	2,362	2,407
CITY PUBLIC SERVICE	263,306	242,241	30.0	27.6	66.8%	1,562	1,606
ENTEX, INC.	935,229	889,052	28.0	34.0	65.0%	1,596	1,771
ARKANSAS LOUISIANA GAS CO.	42,227	32,134	37.7	32.3	34.2%	2,364	2,269
ENERGAS	178,081	175,507	74.0	36.0	NA	3,476	3,516
MOUNTAIN							
ARIZONA							
CITIZENS UTILITIES CO.	5,046	4,550	41.0	33.0	90.0%	2,320	2,720
SOUTHWEST GAS CORP.	474,377	400,791	28.3	27.1	36.0%	1,104	962
COLORADO							
PUBLIC SERVICE OF COLORADO	726,636	726,636	84.7	33.4	75.0%	5,624	6,014
K N ENERGY, INC.	5,242	5,242	66.0	28.0	NA	NA	NA
CITY OF COLORADO SPRINGS	102,793	102,793	61.5	27.5	92.0%	6,270	6,357
IDAHO							
WASHINGTON WATER POWER	16,438	14,332	71.8	NA	25.0%	6,179	6,882
INTERMOUNTAIN GAS CO.	92,039	93,581	51.1	18.3	46.0%	5,822	6,448
MONTANA							
MONTANA-DAKOTA UTILITIES CO.	54,451	53,842	58.2	28.7	NA	5,875	7,515
MONTANA POWER COMPANY	92,060	92,060	118.0	36.0	59.0%	7,099	8,279
GREAT FALLS GAS CO.	20,702	20,702	67.7	40.6	78.8%	6,130	7,650
NEVADA							
SOUTHWEST GAS CORP.	161,368	134,928	43.4	31.1	50.0%	2,342	2,177
WESTPAC UTILITLIES	60,652	58,968	41.0	25.0	61.0%	5,001	6,022
NEW MEXICO							
GAS CO. OF NEW MEXICO	297,204	282,344	50.2	27.6	NA	NA	NA
UTAH							
MOUNTAIN FUEL SUPPLY CO.	418,426	418,426	82.4	37.7	89.0%	5,122	5,882
WYOMING							
MOUNTAIN FUEL SUPPLY CO.	17,718	17,718	81.5	29.0	72.0%	8,035	8,352
NORTHERN MOUNTAIN GAS CO.	38,167	38,167	86.0	28.0	90.0%	7,070	7,642
MONTANA-DAKOTA UTILITIES CO.	10,607	10,467	66.2	32.0	NA	6,607	7,697
K N ENERGY, INC.	9,047	9,047	64.0	27.0	NA	NA	NA
PACIFIC							
CALIFORNIA							
PACIFIC GAS AND ELECTRIC	3,050,984	2,989,964	44.0	22.5	78.0%	1,442	1,738
SAN DIEGO GAS & ELECTRIC	594,828	516,234	20.0	24.0	71.0%	1,201	1,052
SOUTHERN CALIFORNIA GAS CO.	4,086,365	3,787,025	33.9	35.8	NA	1,386	1,557
SOUTHWEST GAS CORP.	63,954	56,919	42.1	26.4	83.0%	3,828	3,668
HAWAII							
GASCO	30,200	0	0.0	19.5	0	0	0
OREGON							
NORTHWEST NATURAL GAS CO.	250,114	228,944	44.9	24.1	27.0%	3,441	4,451
WASHINGTON							
WASHINGTON WATER POWER	56,142	54,359	85.7	NA	34.0%	6,179	6,882
WASHINGTON NATURAL GAS CO.	271,196	266,097	62.5	20.2	26.0%	4,177	4,848
NORTHWEST NATURAL GAS CO.	6,189	5,666	43.0	24.1	7.0%	3,441	4,451
CASCADE NATURAL GAS CORP.	75,000	55,500	50.0	30.0	33.0%	5,185	5,640

APPENDIX 2

COMPETITIVE FUEL PRICES

The information in this section presents the average delivered price (as of December 31, 1987) of competitive fuels distributed to residential customers, gas' principal competition in each market, and the average annual gas heating bill. The gas heating bill is derived by multiplying the averaging heating consumption per single family home, as shown in Appendix 1, by the gas price shown in this appendix for each company. The data reflect prices in the principal city served within each company's franchise area. Regional fuel prices for competitive fuels are listed at the end of each division. Prices are expressed in dollars per million Btu for comparison.

The prices for natural gas represent househeating use only and exclude base load prices. Base load consumption includes all domestic uses of gas (e.g., ranges, water heaters, clothes dryers and air conditioning) except househeating. Moreover, base load prices are generally higher than househeating prices because utilities charge more per unit of energy for small monthly consumption (base load only) and less per unit of energy for large monthly consumption (base load plus winter heating use). The prices for electricity represent total electric use or the rate prevailing for 600 kWh per month and above. The following conversion factors were used to convert reported data to Btu.

Conversion Factors

Natural Gas	1,000 cubic feet/million Btu
Fuel Oil #2	7.194 gallons/million Btu
Electricity	293.083 kWh/million Btu
Propane	10.917 gallons/million Btu

Information marked "NA" represents data not available or fuel not distributed.

APPENDIX 2 -- COMPETITIVE FUEL PRICES

DIVISION / STATE / COMPANY	PRINCIPAL CITY SERVED	AS OF DECEMBER 31, 1987 NATURAL GAS	FUEL OIL	ELECTRIC	PROPANE PRICE	GAS HTG. BILL	COMPETITIVE FUEL
NEW ENGLAND							
CONNECTICUT							
SOUTHERN CONNECTICUT GAS CO.	BRIDGEPORT	$8.15	$5.88	$32.24	$10.04	$630.81	FUEL OIL
NORTHEAST UTILITIES	WATERBURY	$8.85	$6.21	$25.05	NA	$778.80	FUEL OIL
CONNECTICUT NATURAL GAS	HARTFORD	$6.69	$5.86	$20.90	$8.22	$561.71	FUEL OIL
MAINE							
NORTHERN UTILITIES	PORTLAND	$7.01	$6.11	$23.45	$10.37	$623.89	FUEL OIL
MASSACHUSETTS							
FALL RIVER GAS CO.	FALL RIVER	$4.80	$5.61	$23.45	NA	$480.00	FUEL OIL
BOSTON GAS CO.	BOSTON	$6.13	$6.47	$25.16	$9.83	$649.78	FUEL OIL
COMMONWEALTH GAS CO.	WORCESTER	$6.07	$6.15	$20.52	$11.34	$728.40	FUEL OIL
BAY STATE GAS CO.	BROCKTON	$6.05	$5.89	$24.91	$10.37	$538.45	FUEL OIL
COLONIAL GAS CO.	CAPE COD	$6.83	$5.68	$22.86	$12.55	$580.55	ELECTRICITY
ESSEX COUNTY GAS CO.	HAVERHILL	$6.23	$5.67	$18.50	$9.83	$498.40	FUEL OIL
LOWELL GAS CO.	LOWELL	$5.80	$5.21	$21.98	$11.35	$498.80	FUEL OIL
NEW HAMPSHIRE							
NORTHERN UTILITIES	PORTSMOUTH	$5.79	$6.29	$26.38	$10.37	$515.31	FUEL OIL
RHODE ISLAND							
PROVIDENCE GAS CO.	PROVIDENCE	$6.19	$5.97	$24.09	$11.57	$557.19	FUEL OIL
VALLEY GAS CO.	PAWTUCKET	$6.15	$5.34	$29.31	$10.92	$461.48	FUEL OIL
VERMONT							
VERMONT GAS SYSTEMS	BURLINGTON	$5.85	$5.95	$23.74	$10.04	$544.05	FUEL OIL
NEW ENGLAND DIVISION		$6.52	$6.02	$24.21	$10.40	$622.01	
MIDDLE ATLANTIC							
NEW JERSEY							
SOUTH JERSEY GAS CO.	ATLANTIC CITY	$5.64	$5.79	$16.52	$12.88	$404.17	FUEL OIL
ELIZABETHTOWN GAS CO.	ELIZABETH	$6.77	$5.82	$29.51	NA	$772.32	FUEL OIL
NEW JERSEY NATURAL GAS COMPANY	ASBURY PARK	$7.38	$5.94	$23.94	$10.59	$623.09	FUEL OIL
PUBLIC SERVICE ELECTRIC & GAS	NEWARK	$5.22	$6.08	$17.29	NA	$548.21	FUEL OIL
NEW YORK							
ST. LAWRENCE GAS CO.	MASSENA	$4.48	$5.01	$14.07	$10.70	$555.52	FUEL OIL
LONG ISLAND LIGHTING CO.	LONG BEACH	$6.04	$6.68	$23.97	NA	$696.61	NA
NEW YORK STATE ELECTRIC & GAS	ITHACA	$7.55	$5.68	$26.00	$10.92	$785.20	FUEL OIL
CONSOLIDATED EDISON CO.	NEW YORK CITY	$5.75	$6.47	$41.00	NA	$718.75	FUEL OIL
COLUMBIA GAS OF NEW YORK	BINGHAMTON	$5.39	$6.11	$34.29	$10.86	$523.43	FUEL OIL
CENTRAL HUDSON GAS & ELECTRIC	POUGHKEEPSIE	$5.76	$5.68	$25.76	$11.46	$362.88	FUEL OIL
BROOKLYN UNION GAS CO.	NEW YORK CITY	$6.95	$6.48	$22.27	NA	$639.40	FUEL OIL
ORANGE & ROCKLAND UTILITIES	PEARL RIVER	$6.23	$3.69	$28.90	$3.37	$697.33	FUEL OIL
NIAGARA MOHAWK POWER CO.	SYRACUSE	$5.83	$5.61	$19.34	$10.26	$536.94	FUEL OIL
ROCHESTER GAS & ELECTRIC	ROCHESTER	$5.21	$5.80	$22.13	$9.92	$446.50	ELECTRICITY
NATIONAL FUEL GAS DIST.	BUFFALO	$5.00	$5.28	$22.98	NA	$387.22	FUEL OIL
PENNSYLVANIA							
PENNSYLVANIA GAS & WATER	WILKES-BARRE	$5.07	$4.68	$26.38	$11.46	$694.59	ELECTRICITY
COLUMBIA GAS OF PA	PITTSBURGH	$5.91	$4.81	$24.56	$9.83	$558.05	ELECTRICITY
PIKE COUNTY LIGHT & POWER	MATAMORAS	$4.00	$3.69	$23.18	$3.37	$375.73	FUEL OIL
UGI CORPORATION	READING	$5.55	$5.20	$23.94	$10.15	$437.34	FUEL OIL
NATIONAL FUEL GAS DIST.	ERIE	$4.17	$5.52	$20.41	NA	$326.68	FUEL OIL
PHILADELPHIA GAS WORKS	PHILADELPHIA	$6.70	$6.15	$19.46	$11.68	$757.10	FUEL OIL
PEOPLES NATURAL GAS CO.	PITTSBURGH	$5.44	$4.88	$21.10	$11.46	$489.60	ELECTRICITY
PHILADELPHIA ELECTRIC CO.	PHILADELPHIA	$5.96	$5.48	$20.78	$13.43	$536.40	ELECTRICITY
EQUITABLE RESOURCES	PITTSBURGH	$5.82	$4.74	$13.07	$10.81	$586.38	ELECTRICITY
NORTH PENN GAS CO.	RURAL	$4.39	$4.54	$21.98	$10.48	$333.41	FUEL OIL
MIDDLE ATLANTIC DIVISION		$5.81	$5.67	$21.50	$10.85	$561.25	
EAST NORTH CENTRAL							
ILLINOIS							
NORTHERN ILLINOIS GAS CO.	ROCKFORD	$3.87	$5.97	$13.13	$6.60	$414.09	ELECTRICITY
ILLINOIS POWER CO.	DECATUR	$4.91	$3.89	$14.65	$6.26	$387.56	ELECTRICITY
UNITED CITIES GAS CO.	HARRISBURG	$5.03	$5.34	$19.05	$9.72	$251.50	ELECTRICITY
NORTH SHORE GAS CO.	WAUKEGAN	$4.28	$5.90	$12.92	NA	$526.44	ELECTRICITY
IOWA-ILLINOIS GAS & ELECTRIC	ROCK ISLAND	$3.52	$4.94	$19.67	$5.90	$235.84	PROPANE
CENTRAL ILLINOIS PUBLIC SERV.	QUINCY	$5.01	$4.34	$20.76	$6.22	$485.28	ELECTRICITY
PEOPLES GAS LIGHT & COKE	CHICAGO	$4.53	$5.82	$12.46	NA	$566.25	ELECTRICITY
INDIANA							
KOKOMO GAS & FUEL CO.	KOKOMO	$4.89	$5.34	$16.12	$8.19	$415.16	ELECTRICITY
CITIZENS GAS & COKE	INDIANAPOLIS	$5.60	$5.61	$11.72	$6.66	$532.00	ELECTRICITY
LAWRENCEBURG GAS CO.	LAWRENCEBURG	$5.18	$5.34	NA	$9.28	$440.30	ELECTRICITY

APPENDIX 2 -- COMPETITIVE FUEL PRICES

DIVISION / STATE	COMPANY	PRINCIPAL CITY SERVED	AS OF DECEMBER 31, 1987 NATURAL GAS	FUEL OIL	ELECTRIC	PROPANE PRICE	GAS HTG. BILL	COMPETITIVE FUEL
	NORTHERN INDIANA PUBLIC SERVICE	FORT WAYNE	$4.24	$5.06	$18.44	$7.59	$351.74	NA
	HOOSIER GAS CORP.	VINCENNES	$4.65	$4.74	$19.05	$6.44	$348.29	ELECTRICITY
	OHIO VALLEY GAS CORP.	PORTLAND	$3.90	$4.01	$21.98	$5.46	$409.50	ELECTRICITY
	INDIANA GAS CO.	CLARKSVILLE	$5.69	$5.46	$15.33	$8.06	$488.20	ELECTRICITY
	SOUTHERN INDIANA GAS & ELECTRIC	EVANSVILLE	$3.80	$4.61	$22.68	$6.88	$383.27	FUEL OIL
MICHIGAN								
	MICHIGAN CONSOLIDATED GAS	DETROIT	$5.54	$5.62	$29.31	$8.33	$609.40	FUEL OIL
	MICHIGAN GAS CO.	HOLLAND	$5.50	$5.30	$16.00	$8.73	$418.59	FUEL OIL
	WISCONSIN PUBLIC SERVICE	MENOMINEE	$8.91	$5.08	$18.64	$7.06	$676.93	PROPANE
	CONSUMERS POWER CO.	FLINT	$5.53	$5.74	$18.76	$9.17	$460.65	FUEL OIL
	MICHIGAN GAS UTILITIES CO.	MONROE	$3.74	$4.04	$26.29	$7.21	$312.64	FUEL OIL
OHIO								
	CINCINNATI GAS & ELECTRIC	CINCINNATI	$4.12	$5.34	$13.79	$9.28	$350.20	ELECTRICITY
	DAYTON POWER & LIGHT	DAYTON	$4.67	$5.28	$17.57	$9.28	$354.90	FUEL OIL
	EAST OHIO GAS CO.	CLEVELAND	$6.13	$5.50	$19.43	$10.26	$612.73	ELECTRICITY
	NATIONAL GAS & OIL CORP.	NEWARK	$4.85	NA	NA	NA	$316.07	PROPANE
	WEST OHIO GAS CO.	LIMA	$4.76	$4.94	$19.05	$7.64	$454.48	ELECTRICITY
	COLUMBIA GAS OF OHIO	COLUMBUS	$6.04	$6.12	$21.42	$9.20	$517.72	ELECTRICITY
	OHIO GAS CO.	BRYAN	$5.70	$5.48	$21.98	$7.64	$513.00	ELECTRICITY
WISCONSIN								
	WISCONSIN GAS CO.	MILWAUKEE	$6.13	$5.44	$19.02	$7.90	$557.47	FUEL OIL
	WISCONSIN SOUTHERN GAS CO.	LAKE GENEVA	$4.83	$5.34	$19.64	$8.62	$424.69	ELECTRICITY
	WISCONSIN PUBLIC SERVICE	GREEN BAY	$5.63	$5.08	$18.64	$7.06	$428.03	PROPANE
	WISCONSIN FUEL & LIGHT CO.	WAUSAU	$5.95	$5.54	$17.35	$7.10	$426.62	FUEL OIL
	WISCONSIN NATURAL GAS CO.	RACINE	$5.84	$5.04	$19.02	$7.21	$626.05	FUEL OIL
	SUPERIOR WATER, LIGHT & POWER	SUPERIOR	$5.44	$5.38	$18.17	$9.49	$651.71	FUEL OIL
	MADISON GAS & ELECTRIC	MADISON	$6.00	$5.47	$17.70	$6.99	$442.95	FUEL OIL
	WISCONSIN POWER & LIGHT CO.	JANESVILLE	$6.34	$5.28	$20.52	$7.18	$486.59	PROPANE
EAST NORTH CENTRAL DIVISION			$5.17	$5.54	$18.48	$8.18	$491.15	
WEST NORTH CENTRAL								
IOWA								
	CEDAR FALLS UTILITIES	CEDAR FALLS	$4.57	$5.34	$16.12	$5.13	$443.29	PROPANE
	IOWA-ILLINOIS GAS & ELECTRIC	DAVENPORT	$3.55	$4.94	$18.30	$5.90	$255.60	PROPANE
	IOWA PUBLIC SERVICE CO.	SIOUX CITY	$5.17	$3.94	$12.81	$3.93	$375.29	PROPANE
	IOWA ELECTRIC LIGHT & POWER	MUSCATINE	$4.10	$4.94	$18.17	$5.02	$291.10	FUEL OIL
KANSAS								
	MIDWEST ENERGY, INC.	HAYS	$3.61	NA	$17.44	$4.26	$330.25	NA
	KPL GAS SERVICE	WICHITA-TOPEKA	$4.03	$2.67	$27.26	$6.00	$362.40	ELECTRICITY
	ARKANSAS LOUISIANA GAS CO.	WICHITA	$4.01	$3.67	$25.50	$3.93	$212.53	ELECTRICITY
MINNESOTA								
	MINNEGASCO, INC.	MINNEAPOLIS	$4.44	$4.48	$17.00	$7.10	$581.64	ELECTRICITY
	IOWA PUBLIC SERVICE CO.	COON RAPIDS	$4.36	$5.47	$21.10	$8.08	$340.16	ELECTRICITY
	CITY OF DULUTH	DULUTH	$4.88	$5.34	$15.39	$9.28	$683.20	FUEL OIL
	NORTHERN STATES POWER CO.	ST PAUL	$4.54	NA	NA	NA	$414.05	NA
	AUSTIN UTILITIES	AUSTIN	$4.18	$4.47	$18.20	$5.12	$522.50	PROPANE
MISSOURI								
	ASSOCIATED NATURAL GAS CO.	SIKESTON	$4.99	$3.67	NA	$5.78	$415.67	PROPANE
	CITY OF SPRINGFIELD	SPRINGFIELD	$4.19	$4.47	$12.97	$5.34	$293.16	ELECTRICITY
	KPL GAS SERVICE	KANSAS CITY	$3.89	$3.01	$24.91	$7.10	$350.10	ELECTRICITY
	LACLEDE GAS CO.	ST. LOUIS	$4.33	$5.60	$13.23	$7.42	$268.46	ELECTRICITY
NEBRASKA								
	HASTINGS UTILITIES	HASTINGS	$4.76	NA	$20.52	NA	NA	NA
	IOWA PUBLIC SERVICE CO.	SOUTH SIOUX CITY	$5.22	$3.94	NA	$3.93	$329.07	PROPANE
	KPL GAS SERVICE	FALLS CITY	$4.02	$2.74	$21.98	$6.00	$361.58	ELECTRICITY
	NORTHWESTERN PUBLIC SERVICE	GRAND ISLAND	$4.41	$4.01	$8.35	$4.91	$343.98	PROPANE
	MINNEGASCO, INC.	LINCOLN	$4.62	$4.68	$12.90	$7.10	$341.88	ELECTRICITY
	METROPOLITAN UTILITIES DISTRICT	OMAHA	$3.97	$4.87	$10.96	$4.79	$237.90	ELECTRICITY
NORTH DAKOTA								
	NORTHERN STATES POWER CO.	FARGO	$4.28	NA	NA	NA	$348.39	NA
	MONTANA-DAKOTA UTILITIES CO.	BISMARK	$5.05	$4.80	$21.83	$5.13	$357.19	ELECTRICITY
SOUTH DAKOTA								
	NORTHWESTERN PUBLIC SERVICE	ABERDEEN	$4.49	$3.61	$8.50	$4.59	$395.12	PROPANE
	MONTANA-DAKOTA UTILITIES CO.	RAPID CITY	$4.55	$4.80	$26.49	$6.17	$250.54	ELECTRICITY
	IOWA PUBLIC SERVICE CO.	YANKTON	$4.83	$3.94	$15.36	$3.93	$321.82	PROPANE
	MINNEGASCO, INC.	SIOUX FALLS	$4.39	$4.34	$17.00	$6.55	$390.71	ELECTRICITY
WEST NORTH CENTRAL DIVISION			$4.30	$4.81	$18.36	$6.26	$363.35	

APPENDIX 2 -- COMPETITIVE FUEL PRICES

DIVISION / STATE	COMPANY	PRINCIPAL CITY SERVED	AS OF DECEMBER 31, 1987 NATURAL GAS	FUEL OIL	ELECTRIC	PROPANE PRICE	GAS HTG. BILL	COMPETITIVE FUEL
SOUTH ATLANTIC								
DELAWARE								
	DELMARVA POWER & LIGHT CO.	WILMINGTON	$5.70	$5.58	$15.06	$10.86	$462.02	FUEL OIL
DIST. OF COLUMBIA								
	WASHINGTON GAS LIGHT CO.	WASHINGTON	$6.41	$6.61	$17.50	$13.84	$551.26	ELECTRICITY
FLORIDA								
	PEOPLES GAS SYSTEM, INC.	MIAMI	$5.64	$6.61	$23.74	$12.01	$107.12	ELECTRICITY
GEORGIA								
	UNITED CITIES GAS CO.	COLUMBUS	$5.42	$5.34	$20.52	$9.72	$189.70	ELECTRICITY
	ATLANTA GAS LIGHT COMPANY	ATLANTA	$6.23	$5.34	$19.37	$8.73	$292.81	ELECTRICITY
MARYLAND								
	WASHINGTON GAS LIGHT CO.	HYATTSVILLE	$5.48	$6.61	$12.92	$13.84	$442.94	ELECTRICITY
	BALTIMORE GAS & ELECTRIC	BALTIMORE	$5.18	$6.04	$18.23	$7.90	$365.92	FUEL OIL
	COLUMBIA GAS OF MD	CUMBERLAND	$6.27	$5.81	$17.20	$12.01	$500.77	ELECTRICITY
NORTH CAROLINA								
	PIEDMONT NATURAL GAS CO.	CHARLOTTE	$6.44	$5.28	$23.79	$8.95	$391.94	ELECTRICITY
	PUBLIC SERVICE OF NORTH CAROLINA	RALEIGH	$5.44	$4.81	$21.54	$9.28	$430.54	ELECTRICITY
	CITY OF WILSON	WILSON	$5.21	$5.34	$18.53	$9.83	$344.57	FUEL OIL
	NORTH CAROLINA NATURAL GAS	FAYETTVILLE	$5.32	$5.34	$23.15	$8.73	$351.12	ELECTRICITY
SOUTH CAROLINA								
	SOUTH CAROLINA ELECTRIC & GAS	COLUMBIA	$5.22	$3.90	$18.93	$3.55	$246.40	ELECTRICITY
	UNITED CITIES GAS CO.	GAFFNEY	$4.72	$5.34	$17.58	$9.72	$188.80	ELECTRICITY
	PIEDMONT NATURAL GAS CO.	GREENVILLE	$6.23	$5.48	$19.82	$8.62	$359.22	ELECTRICITY
	PEOPLES GAS CO. OF S.C.	FLORENCE	$7.14	$6.01	$20.22	$9.83	NA	ELECTRICITY
VIRGINIA								
	UNITED CITIES GAS CO.	BRISTOL	$4.37	$5.34	$17.58	$9.72	$218.50	ELECTRICITY
	WASHINGTON GAS LIGHT CO.	ALEXANDRIA	$5.64	$6.61	$15.24	$13.84	$421.53	ELECTRICITY
	CITY OF RICHMOND	RICHMOND	$5.55	$5.60	$21.98	$9.77	$311.74	ELECTRICITY
	COLUMBIA GAS OF VA	STAUNTON	$5.70	$5.67	$23.74	$8.94	$421.88	ELECTRICITY
	CITY OF DANVILLE	DANVILLE	$4.19	$5.94	$11.43	$8.90	$361.32	ELECTRICITY
	VIRGINIA NATURAL GAS	NORFOLK	$6.49	$5.50	$17.00	$9.28	$292.13	ELECTRICITY
WEST VIRGINIA								
	HOPE GAS CO.	PARKERSBURG	$5.87	$4.88	$17.00	$6.08	$445.89	ELECTRICITY
SOUTH ATLANTIC DIVISION			$5.84	$5.40	$18.83	$9.27	$351.57	
EAST SOUTH CENTRAL								
ALABAMA								
	CITY OF FLORENCE	FLORENCE	$5.46	$4.68	$16.91	$8.30	NA	ELECTRICITY
	ALABAMA GAS CORP.	BIRMINGHAM	$5.11	NA	$15.91	$9.50	$275.94	ELECTRICITY
	DECATUR UTILITIES	DECATUR	$3.33	$4.15	$15.66	$8.19	$156.70	ELECTRICITY
	CITY OF HUNTSVILLE	HUNTSVILLE	$4.53	$4.22	$15.06	$8.73	NA	ELECTRICITY
	SOUTHEAST ALABAMA GAS	ANDALUSIA	$6.26	NA	NA	NA	$413.23	ELECTRICITY
KENTUCKY								
	DELTA NATURAL GAS CO.	WINCHESTER	$4.73	$4.68	$16.12	$8.73	$264.78	ELECTRICITY
	UNION LIGHT, HEAT & POWER	COVINGTON	$4.71	$5.34	$12.31	$9.28	$400.35	ELECTRICITY
	LOUISVILLE GAS & ELECTRIC	LOUISVILLE	$3.57	$5.00	$12.37	$9.17	$232.23	ELECTRICITY
	COLUMBIA GAS OF KY	LEXINGTON	$5.57	$4.23	$14.51	$8.73	$441.96	ELECTRICITY
	WESTERN KENTUCKY GAS CO.	OWENSBORO	$3.62	$4.34	$16.12	$8.73	$252.54	ELECTRICITY
MISSISSIPPI								
	MISSISSIPPI VALLEY GAS CO.	NA	$6.00	NA	$19.05	$8.73	$443.40	NA
	ENTEX, INC.	GULFPORT	$5.55	$4.15	$16.41	$9.06	$210.90	ELECTRICITY
TENNESSEE								
	MEMPHIS LIGHT, GAS & WATER	MEMPHIS	$4.50	$4.68	$16.12	$8.73	$364.50	PROPANE
	UNITED CITIES GAS CO.	MARYVILLE	$5.55	$5.34	$16.12	$9.72	$249.75	ELECTRICITY
	MIDDLE TENNESSEE NATURAL GAS	SMITHVILLE	$5.80	$3.91	$15.83	$8.83	$324.80	ELECTRICITY
	NASHVILLE GAS CO.	NASHVILLE	$4.36	$4.94	$17.00	$9.06	$370.60	ELECTRICITY
EAST SOUTH CENTRAL DIVISION			$4.84	$4.30	$15.73	$8.53	$312.18	
WEST SOUTH CENTRAL								
ARKANSAS								
	ARKANSAS WESTERN GAS CO.	FAYETTEVILLE	$4.44	NA	$22.41	$8.19	$226.44	ELECTRICITY
	ARKANSAS LOUISIANA GAS CO.	LITTLE ROCK	$4.76	NA	$23.04	$8.62	$246.57	ELECTRICITY
	ARKANSAS OKLAHOMA GAS CORP.	FORT SMITH	$2.63	NA	$19.05	$7.86	$123.70	ELECTRICITY
	ASSOCIATED NATURAL GAS CO.	BLYTHEVILLE	$4.54	$4.50	$23.45	$5.02	$247.88	FUEL OIL
LOUISIANA								
	ENTEX, INC.	LAKE CHARLES	$6.36	$4.68	$18.58	$8.30	$254.52	ELECTRICITY
	ARKANSAS LOUISIANA GAS CO.	SHREVEPORT	$4.65	$3.81	$19.05	$9.06	$226.46	ELECTRICITY
	TRANS LOUISIANA	LAFAYETTE	$6.09	NA	$21.98	$10.04	$389.63	ELECTRICITY

APPENDIX 2 -- COMPETITIVE FUEL PRICES

DIVISION / STATE	COMPANY	PRINCIPAL CITY SERVED	AS OF DECEMBER 31, 1987 NATURAL GAS	FUEL OIL	ELECTRIC	PROPANE PRICE	GAS HTG. BILL	COMPETITIVE FUEL
	NEW ORLEANS PUBLIC SERVICE	NEW ORLEANS	$5.14	NA	$17.56	NA	$240.04	ELECTRICTIY
	LOUISIANA GAS SERVICE CO.	HARVEY	$6.02	NA	$20.16	NA	$207.09	ELECTRICITY
OKLAHOMA								
	OKLAHOMA NATURAL GAS CO.	OKLAHOMA CITY	$4.81	NA	$10.26	$6.33	$305.92	ELECTRICITY
	ARKANSAS LOUISIANA GAS CO.	LAWTON	$4.89	$3.87	$20.81	$3.28	$171.64	ELECTRICITY
	KPL GAS SERVICE	BARTLESVILLE	$4.06	$2.67	$19.05	$5.68	$365.65	ELECTRICITY
	LONE STAR GAS CO.	DURANT	$4.93	NA	$20.52	$8.52	$270.97	ELECTRICITY
	ARKANSAS OKLAHOMA GAS CORP.	SALLISAW	$5.00	NA	$19.05	$7.86	$229.95	ELECTRICITY
TEXAS								
	LONE STAR GAS CO.	DALLAS	$5.27	NA	$16.71	$8.52	$289.75	ELECTRICITY
	ENTEX, INC.	HOUSTON	$5.58	$4.01	$23.15	$8.19	$156.24	ELECTRICITY
	ENERGAS	LUBBOCK	$3.74	NA	$12.58	$5.46	$411.40	ELECTRICITY
	CITY PUBLIC SERVICE	SAN ANTONIO	$3.57	NA	$16.59	$7.86	$107.12	NA
	ARKANSAS LOUISIANA GAS CO.	TEXARKANA	$4.73	$3.94	$19.05	$7.97	$152.78	ELECTRICITY
WEST SOUTH CENTRAL DIVISION			$4.98	$4.01	$21.51	$7.67	$243.02	
MOUNTAIN								
ARIZONA								
	CITIZENS UTILITIES CO.	NOGALES	$6.47	NA	$26.85	$10.37	$265.27	PROPANE
	SOUTHWEST GAS CORP.	PHOENIX	$6.75	$3.67	$25.15	$11.24	$191.18	ELECTRICITY
COLORADO								
	CITY OF COLORADO SPRINGS	COLORADO SPRINGS	$4.65	NA	$16.71	$7.31	$285.98	ELECTRICITY
	PUBLIC SERVICE OF COLORADO	DENVER	$4.15	$3.27	$25.62	$3.06	$351.62	ELECTRICITY
IDAHO								
	WASHINGTON WATER POWER	LEWISTON	$4.21	$6.41	$13.37	$10.04	$302.02	ELECTRICITY
	INTERMOUNTAIN GAS CO.	BOISE	$6.21	$4.34	$12.90	$11.24	$317.33	ELECTRICITY
MONTANA								
	MONTANA POWER COMPANY	NA	$3.37	$5.34	$16.03	$7.21	$397.66	WOOD
	MONTANA-DAKOTA UTILITIES CO.	BILLINGS	$4.82	$4.71	$17.79	$5.02	$280.29	ELECTRICITY
	GREAT FALLS GAS CO.	GREAT FALLS	$4.08	$4.41	$15.53	$7.64	$276.42	ELECTRICITY
NEVADA								
	SOUTHWEST GAS CORP.	LAS VEGAS	$4.61	NA	$14.41	$10.92	$200.14	ELECTRICITY
	WESTPAC UTILITLIES	RENO	$5.67	$5.68	$25.21	$11.46	$232.59	FUEL OIL
UTAH								
	MOUNTAIN FUEL SUPPLY CO.	SALT LAKE CITY	$4.28	$3.49	$24.33	$7.34	$352.71	ELECTRICITY
WYOMING								
	NORTHERN MOUNTAIN GAS CO.	CASPER	$4.18	NA	$14.38	$6.74	$359.48	ELECTRICITY
	MONTANA-DAKOTA UTILITIES CO.	SHERIDAN	$4.48	NA	$19.33	$5.24	$296.25	ELECTRICITY
	MOUNTAIN FUEL SUPPLY CO.	ROCK SPRINGS	$4.22	$3.49	$24.33	$7.34	$343.76	ELECTRICITY
MOUNTAIN DIVISION			$4.82	$3.71	$22.61	$9.06	$318.12	
PACIFIC								
CALIFORNIA								
	PACIFIC GAS AND ELECTRIC	SAN FRANCISCO	$4.50	$7.35	$23.45	$13.10	$198.00	ELECTRICITY
	SAN DIEGO GAS & ELECTRIC	SAN DIEGO	$4.52	NA	$29.10	$12.55	$90.40	ELECTRICITY
	SOUTHWEST GAS CORP.	VICTORVILLE	$8.12	$4.51	$26.20	$11.46	$341.94	PROPANE
	SOUTHERN CALIFORNIA GAS CO.	LOS ANGELES	$5.31	NA	$23.84	NA	$180.10	ELECTRICITY
OREGON								
	NORTHWEST NATURAL GAS CO.	PORTLAND	$6.02	$5.80	$13.33	$9.83	$270.25	ELECTRICITY
WASHINGTON								
	WASHINGTON WATER POWER	SPOKANE	$3.95	$6.41	$12.06	$10.04	$338.24	ELECTRICITY
	WASHINGTON NATURAL GAS CO.	SEATTLE	$5.38	$5.54	$15.09	NA	$336.20	ELECTRICITY
	NORTHWEST NATURAL GAS CO.	VANCOUVER	$5.68	$5.80	$10.84	$9.83	$244.03	ELECTRICITY
	CASCADE NATURAL GAS CORP.	SEATTLE	$5.31	$5.01	$13.19	$10.92	$265.70	ELECTRICITY
PACIFIC DIVISION			$4.99	$7.02	$23.28	$12.71	$192.61	

APPENDIX 3

HOUSEHEATING UNIT ADDITIONS--1987 ACTUAL AND 1988 ANTICIPATED

Column 1 summarized househeating unit additions from new construction. Column 2 summarizes total conversions from other heating fuels. Column 3 summarizes unit losses and column 4 presents the net unit additions.

APPENDIX 3 -- ADDITIONS FROM NEW CONSTRUCTION AND CONVERSIONS

DIVISION / STATE	COMPANY	ADDITIONS FROM NEW CONSTRUCTION 1987	ADDITIONS FROM NEW CONSTRUCTION 1988	TOTAL CONVERSIONS TO GAS 1987	TOTAL CONVERSIONS TO GAS 1988	LESS TOTAL LOSSES 1987	LESS TOTAL LOSSES 1988	NET ADDITIONS 1987	NET ADDITIONS 1988
NEW ENGLAND									
CONNECTICUT									
	SOUTHERN CONNECTICUT GAS CO.	2,649	2,200	1,189	1,800	NA	NA	NA	NA
	NORTHEAST UTILITIES	3,572	2,795	1,061	NA	NA	NA	NA	NA
	CONNECTICUT NATURAL GAS	1,764	1,600	1,390	1,530	120	120	3,034	3,010
MAINE									
	NORTHERN UTILITIES	125	150	60	70	185	100	0	120
MASSACHUSETTS									
	FALL RIVER GAS CO.	NA	NA	532	557	10	10	NA	NA
	BAY STATE GAS CO.	3,500	3,500	3,200	4,200	100	100	6,600	7,600
	COMMONWEALTH GAS CO.	2,589	2,245	1,695	1,852	6	1	4,278	4,096
	LOWELL GAS CO.	1,925	1,800	235	157	30	25	2,130	1,932
	BOSTON GAS CO.	3,052	3,350	6,310	6,390	NA	NA	NA	NA
NEW HAMPSHIRE									
	NORTHERN UTILITIES	800	800	200	220	40	50	960	970
RHODE ISLAND									
	VALLEY GAS CO.	470	350	628	545	40	40	1,058	855
	PROVIDENCE GAS CO.	2,730	2,600	810	770	3	3	3,537	3,367
VERMONT									
	VERMONT GAS SYSTEMS	350	500	670	620	NA	NA	NA	NA
MIDDLE ATLANTIC									
NEW JERSEY									
	SOUTH JERSEY GAS CO.	8,818	9,017	1,680	1,039	NA	NA	NA	NA
	PUBLIC SERVICE ELECTRIC & GAS	21,300	18,000	11,927	12,000	NA	NA	NA	NA
	ELIZABETHTOWN GAS CO.	4,800	4,800	2,150	2,100	NA	NA	NA	NA
	NEW JERSEY NATURAL GAS COMPANY	16,238	14,659	3,772	NA	NA	NA	NA	NA
NEW YORK									
	NATIONAL FUEL GAS DIST.	2,772	NA	999	NA	2,778	NA	993	NA
	CENTRAL HUDSON GAS & ELECTRIC	871	900	659	550	NA	NA	NA	NA
	NIAGARA MOHAWK POWER CO.	4,000	4,000	NA	NA	NA	NA	NA	NA
	CONSOLIDATED EDISON CO.	3,591	1,500	NA	NA	NA	NA	NA	NA
	ROCHESTER GAS & ELECTRIC	3,290	3,300	1,941	1,800	NA	NA	NA	NA
	COLUMBIA GAS OF NEW YORK	537	582	204	198	287	140	454	640
	BROOKLYN UNION GAS CO.	3,300	3,300	4,100	4,100	1,200	1,200	6,200	6,200
	LONG ISLAND LIGHTING CO.	2,504	2,500	3,919	3,200	NA	NA	NA	NA
	ORANGE & ROCKLAND UTILITIES	2,186	1,776	NA	NA	NA	NA	NA	NA
	ST. LAWRENCE GAS CO.	62	10	218	175	20	7	260	178
PENNSYLVANIA									
	PENNSYLVANIA GAS & WATER	601	800	2,775	3,540	20	20	3,356	4,320
	EQUITABLE RESOURCES	1,606	1,600	95	100	1,868	1,500	(167)	200
	COLUMBIA GAS OF PA	2,655	2,828	690	942	1,302	1,520	2,043	2,250
	NORTH PENN GAS CO.	241	285	153	140	NA	NA	NA	NA
	PHILADELPHIA GAS WORKS	1,505	1,600	1,875	1,960	1,000	1,000	2,380	2,560
	UGI CORPORATION	1,819	1,410	1,971	2,190	360	360	3,430	3,240
	PEOPLES NATURAL GAS CO.	2,035	1,905	468	562	781	781	1,722	1,686
	NATIONAL FUEL GAS DIST.	1,092	1,169	410	NA	4,261	NA	(2,759)	NA
	PHILADELPHIA ELECTRIC CO.	4,670	4,700	1,938	1,900	100	100	6,508	6,500
	PIKE COUNTY LIGHT & POWER	12	10	NA	NA	NA	NA	NA	NA
EAST NORTH CENTRAL									
ILLINOIS									
	UNITED CITIES GAS CO.	200	200	57	70	NA	NA	NA	NA
	PEOPLES GAS LIGHT & COKE	1,700	2,000	800	500	2,500	1,600	0	900
	IOWA-ILLINOIS GAS & ELECTRIC	82	100	10	9	274	NA	(182)	NA
	NORTH SHORE GAS CO.	2,845	2,533	465	666	60	60	3,250	3,139
	NORTHERN ILLINOIS GAS CO.	44,423	35,000	1,670	1,500	5,000	5,000	41,093	31,500
INDIANA									
	OHIO VALLEY GAS CORP.	40	55	176	167	12	10	204	212
	HOOSIER GAS CORP.	113	113	103	236	85	85	131	264
	INDIANA GAS CO.	4,500	4,300	3,640	3,340	925	825	7,215	6,815
MICHIGAN									
	WISCONSIN PUBLIC SERVICE	45	40	37	25	5	5	77	60
	CONSUMERS POWER CO.	20,000	19,000	2,800	2,700	NA	NA	NA	NA
	MICHIGAN CONSOLIDATED GAS	10,820	NA	2,607	NA	NA	NA	NA	NA
	MICHIGAN GAS UTILITIES CO.	1,190	NA	948	NA	224	NA	1,914	NA
	MICHIGAN GAS CO.	1,296	1,186	658	602	671	34	1,283	1,754
OHIO									
	WEST OHIO GAS CO.	394	150	333	140	NA	90	NA	200
	NATIONAL GAS & OIL CORP.	340	350	NA	NA	NA	NA	NA	NA
	COLUMBIA GAS OF OHIO	16,944	15,500	3,738	4,360	3,034	3,750	17,648	16,110
	DAYTON POWER & LIGHT	2,082	NA	NA	NA	NA	NA	NA	NA
	OHIO GAS CO.	250	200	270	245	63	52	457	393
	EAST OHIO GAS CO.	8,421	8,000	2,387	3,000	NA	NA	NA	NA

APPENDIX 3 -- ADDITIONS FROM NEW CONSTRUCTION AND CONVERSIONS

DIVISION / STATE	COMPANY	ADDITIONS FROM NEW CONSTRUCTION 1987	ADDITIONS FROM NEW CONSTRUCTION 1988	TOTAL CONVERSIONS TO GAS 1987	TOTAL CONVERSIONS TO GAS 1988	LESS TOTAL LOSSES 1987	LESS TOTAL LOSSES 1988	NET ADDITIONS 1987	NET ADDITIONS 1988
WISCONSIN									
	WISCONSIN FUEL & LIGHT CO.	392	300	432	350	0	0	824	650
	WISCONSIN GAS CO.	2,217	1,870	3,868	3,630	391	NA	5,694	NA
	SUPERIOR WATER, LIGHT & POWER	27	23	61	85	10	15	78	93
	WISCONSIN PUBLIC SERVICE	1,616	1,438	1,676	1,500	25	25	3,267	2,913
	WISCONSIN NATURAL GAS CO.	3,916	4,500	1,394	1,200	NA	NA	NA	NA
	WISCONSIN POWER & LIGHT CO.	852	1,348	1,576	1,348	NA	NA	NA	NA
	MADISON GAS & ELECTRIC	1,890	1,777	1,260	1,185	NA	NA	NA	NA
	WISCONSIN SOUTHERN GAS CO.	320	320	331	475	20	0	631	795
WEST NORTH CENTRAL									
IOWA									
	IOWA-ILLINOIS GAS & ELECTRIC	1,197	1,000	160	80	225	NA	1,132	NA
	CEDAR FALLS UTILITIES	21	10	84	21	22	NA	83	NA
KANSAS									
	KPL GAS SERVICE	4,000	4,000	4,352	4,000	1,000	1,000	7,352	7,000
	MIDWEST ENERGY, INC.	0	0	9	NA	2	NA	7	NA
MINNESOTA									
	MINNEGASCO, INC.	17,139	12,375	2,060	NA	325	325	18,874	NA
	AUSTIN UTILITIES	15	20	4	9	5	4	14	25
	CITY OF DULUTH	42	50	232	365	267	255	7	160
	NORTHERN STATES POWER CO.	4,971	NA	NA	NA	NA	NA	NA	NA
MISSOURI									
	ASSOCIATED NATURAL GAS CO.	252	300	227	300	NA	NA	NA	NA
	KPL GAS SERVICE	7,500	8,000	2,000	2,000	1,300	900	8,200	9,100
	CITY OF SPRINGFIELD	1,207	NA	NA	NA	NA	NA	NA	NA
	LACLEDE GAS CO.	8,500	NA	NA	NA	NA	NA	NA	NA
NEBRASKA									
	KPL GAS SERVICE	2	2	3	3	11	8	(6)	(3)
	HASTINGS UTILITIES	21	20	0	0	22	20	(1)	0
	METROPOLITAN UTILITIES DISTRIC	2,433	1,900	88	90	271	260	2,250	1,730
	NORTHWESTERN PUBLIC SERVICE	50	0	0	0	NA	NA	NA	NA
	MINNEGASCO, INC.	1,412	NA	62	NA	310	NA	1,164	NA
NORTH DAKOTA									
	NORTHERN STATES POWER CO.	450	NA	NA	NA	NA	NA	NA	NA
	MONTANA-DAKOTA UTILITIES CO.	372	250	42	23	24	11	390	262
SOUTH DAKOTA									
	MONTANA-DAKOTA UTILITIES CO.	236	200	77	32	0	NA	313	NA
	NORTHWESTERN PUBLIC SERVICE	50	50	0	0	NA	NA	NA	NA
	MINNEGASCO, INC.	439	400	743	300	20	20	1,162	680
SOUTH ATLANTIC									
DELAWARE									
	DELMARVA POWER & LIGHT CO.	406	500	793	800	500	500	699	800
DIST. OF COLUMBIA									
	WASHINGTON GAS LIGHT CO.	400	400	1,200	1,400	2,400	1,600	(800)	200
FLORIDA									
	PEOPLES GAS SYSTEM, INC.	2,476	2,000	3,996	3,995	940	1,010	5,532	4,985
GEORGIA									
	ATLANTA GAS LIGHT COMPANY	43,535	48,200	NA	NA	NA	NA	NA	NA
	UNITED CITIES GAS CO.	400	500	90	120	NA	NA	NA	NA
MARYLAND									
	WASHINGTON GAS LIGHT CO.	2,900	4,200	1,600	1,500	900	900	3,600	4,800
	BALTIMORE GAS & ELECTRIC	735	800	544	500	300	300	979	1,000
	COLUMBIA GAS OF MD	184	210	63	60	240	360	7	(90)
NORTH CAROLINA									
	NORTH CAROLINA NATURAL GAS	300	500	249	285	NA	NA	NA	NA
	CITY OF WILSON	86	81	35	29	NA	NA	NA	NA
	PIEDMONT NATURAL GAS CO.	5,240	5,275	4,743	6,255	818	500	9,165	11,030
	PUBLIC SERVICE OF N.C.	4,820	5,000	5,137	4,870	431	400	9,526	9,470
SOUTH CAROLINA									
	PIEDMONT NATURAL GAS CO.	777	925	1,266	1,300	412	500	1,631	1,725
	UNITED CITIES GAS CO.	100	100	55	65	NA	NA	NA	NA
VIRGINIA									
	VIRGINIA NATURAL GAS	5,510	4,950	1,046	940	133	100	6,423	5,790
	CITY OF DANVILLE	130	150	50	50	27	22	153	178
	UNITED CITIES GAS CO.	500	700	175	225	NA	NA	NA	NA
	CITY OF RICHMOND	415	800	NA	NA	NA	NA	NA	NA
	COLUMBIA GAS OF VA	1,158	1,780	167	210	79	190	1,246	1,800
	WASHINGTON GAS LIGHT CO.	5,400	7,400	900	1,200	700	700	5,600	7,900
WEST VIRGINIA									
	HOPE GAS CO.	720	800	30	30	63	68	687	762
EAST SOUTH CENTRAL									

DIVISION / STATE	COMPANY	ADDITIONS FROM NEW CONSTRUCTION 1987	ADDITIONS FROM NEW CONSTRUCTION 1988	TOTAL CONVERSIONS TO GAS 1987	TOTAL CONVERSIONS TO GAS 1988	LESS TOTAL LOSSES 1987	LESS TOTAL LOSSES 1988	NET ADDITIONS 1987	NET ADDITIONS 1988
ALABAMA									
	CITY OF HUNTSVILLE	407	NA	265	307	140	NA	532	NA
	DECATUR UTILITIES	210	200	10	40	13	10	207	230
	CITY OF FLORENCE	80	80	209	265	37	35	252	310
	ALABAMA GAS CORP.	5,925	3,800	1,419	1,500	2,150	2,150	5,194	3,150
KENTUCKY									
	WESTERN KENTUCKY GAS CO.	1,500	1,800	1,223	700	NA	NA	NA	NA
	COLUMBIA GAS OF KY	1,905	2,100	190	230	744	840	1,351	1,490
MISSISSIPPI									
	MISSISSIPPI VALLEY GAS CO.	3,068	3,400	417	465	NA	NA	NA	NA
	ENTEX, INC.	1,100	1,200	161	302	1,995	1,050	(734)	452
TENNESSEE									
	UNITED CITIES GAS CO.	2,986	3,500	1,392	1,500	NA	NA	NA	NA
	MIDDLE TENNESSEE NATURAL GAS	1,040	700	900	500	40	40	1,900	1,160
	NASHVILLE GAS CO.	2,572	NA	1,100	NA	52	NA	3,620	NA
WEST SOUTH CENTRAL									
ARKANSAS									
	ARKANSAS WESTERN GAS CO.	1,372	NA	NA	NA	NA	NA	NA	NA
	ASSOCIATED NATURAL GAS CO.	102	100	145	150	NA	NA	NA	NA
LOUISIANA									
	TRANS LOUISIANA	183	NA	66	200	NA	NA	NA	NA
	ENTEX, INC.	336	400	135	190	1,636	NA	(1,165)	NA
OKLAHOMA									
	OKLAHOMA NATURAL GAS CO.	9,552	9,000	275	500	2,000	1,500	7,827	8,000
	KPL GAS SERVICE	20	30	15	10	283	200	(248)	(160)
TEXAS									
	LONE STAR GAS CO.	NA	NA	NA	NA	NA	NA	NA	NA
	CITY PUBLIC SERVICE	1,883	4,404	0	0	587	1,303	1,296	3,101
	ENTEX, INC.	8,506	8,830	956	1,875	7,150	7,550	2,312	3,155
	ARKANSAS LOUISIANA GAS CO.	NA	NA	NA	NA	NA	NA	NA	NA
	ENERGAS	1,241	872	135	294	71	120	1,305	1,046
MOUNTAIN									
ARIZONA									
	CITIZENS UTILITIES CO.	96	100	0	0	0	0	96	100
	SOUTHWEST GAS CORP.	6,311	8,000	233	785	2,750	2,500	3,794	6,285
COLORADO									
	CITY OF COLORADO SPRINGS	2,000	2,000	NA	NA	NA	NA	NA	NA
	PUBLIC SERVICE OF COLORADO	10,871	13,428	NA	NA	NA	NA	NA	NA
IDAHO									
	INTERMOUNTAIN GAS CO.	1,406	1,500	906	1,120	707	NA	1,605	NA
	WASHINGTON WATER POWER	176	200	151	200	NA	NA	NA	NA
MONTANA									
	MONTANA-DAKOTA UTILITIES CO.	35	25	46	28	17	5	64	48
	GREAT FALLS GAS CO.	61	80	24	30	25	30	60	80
	MONTANA POWER COMPANY	661	650	505	NA	NA	NA	NA	NA
NEVADA									
	WESTPAC UTILITIES	2,391	3,000	265	800	150	200	2,506	3,600
	SOUTHWEST GAS CORP.	9,230	8,148	1,529	1,062	10	7	10,749	9,203
UTAH									
	MOUNTAIN FUEL SUPPLY CO.	7,559	7,719	2,531	5,469	0	0	10,090	13,188
WYOMING									
	NORTHERN MOUNTAIN GAS CO.	NA	NA	NA	NA	522	500	NA	NA
	MOUNTAIN FUEL SUPPLY CO.	174	182	0	0	0	0	174	182
	MONTANA-DAKOTA UTILITIES CO.	7	2	0	0	12	5	(5)	(3)
PACIFIC									
CALIFORNIA									
	SAN DIEGO GAS & ELECTRIC	24,707	21,990	0	0	0	0	24,707	21,990
	SOUTHERN CALIFORNIA GAS CO.	110,394	90,750	1,044	1,000	NA	NA	NA	NA
	SOUTHWEST GAS CORP.	5,170	7,743	217	320	4	3	5,383	8,060
	PACIFIC GAS AND ELECTRIC	100,000	110,000	0	0	20,000	20,000	80,000	90,000
HAWAII									
	GASCO	0	0	0	0	0	0	0	0
OREGON									
	NORTHWEST NATURAL GAS CO.	4,498	4,500	2,917	2,917	918	918	6,497	6,499
WASHINGTON									
	CASCADE NATURAL GAS CORP.	1,200	NA	2,723	NA	436	NA	3,487	NA
	NORTHWEST NATURAL GAS CO.	255	255	144	144	30	30	369	369
	WASHINGTON NATURAL GAS CO.	9,500	10,180	6,300	7,300	809	800	14,991	16,680
	WASHINGTON WATER POWER	527	550	454	600	NA	NA	NA	NA